CONSIDERATIONS

ON THE

MEDICINAL USE

AND

PRODUCTION

OF

FACTITIOUS AIRS.

BY

THOMAS BEDDOES, M. D.

AND

JAMES WATT, *Engineer.*

PART III.

BRISTOL:

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For J. JOHNSON, in St. Paul's Church-Yard, London.

1795.

THIS letter was not in my hands till those which follow it were printed. The sagacious writer, however, communicates matters so worthy of regard, that I am glad the post of honour, where it will have the fresh attention of the reader, should have fallen to its lot. T. B.

Letter from Sir JEREMIAH MORRISON, Bart. M.D. *to* Dr. DANIEL LORIMER RENSHAW.

My long-esteemed Lorimer,

WHO fo well as you can tell how often the foul of your octogenarian friend has been fore at the fcandals of the times? ABSURDITY, I have frequently thought, fet out on her travels foon after we ftarted from College together (I to fuperior wealth and confideration perhaps, you to rural eafe and a life of lefs contention) and fhe has nearly completed the round of medical erudition. I *see*, as I am apt to fay, and I *foresee.* I fee the degradation of our art, and I forefee its extinction. I remember the day when it had folidity—not without folemnity. I have lived till alas! I may repeat after the Poet

A —— *Miscuit*

——— *Miscuit ima*

Summis longa dies. ———

All is now levity, doubt, diſtraction, chaos. Does not the Apothecary tread on the very heels of the Doctor; or rather does he not carry himſelf as *hail-fellow-well met!* Now if the *dispenser* turn *prescriber*, will not the *prescriber*, I pray you, be neceſſitated by and by to turn *dispenser* in his own defence? Where will the dignity of our faculty and function be then?—But this is preciſely what I predicted. You muſt recollect it—I am ſure you muſt— It was when certain coxcombs, unworthy to be ſaluted by us as *brethren*, threw aſide the cane, the peruke, and the other diſtinguiſhing inſignia of the profeſſion. Well, what comes next? did I not anticipate that alſo? To a change of dreſs ſucceeds a change of deportment. The flippancy of folly introduces the familiar faſhion of making the very patient a party to the preſcription---This they call *openness*, *candour*, but you and I have never dealt in any ſuch openneſs. We have upheld the ſeverity of a graver age. We never gave into this laxity of practice. Had Boerhaave himſelf given into it, ſhould we ever, I pray, have numbered the *crumb-of-bread pill*, among that great man's happieſt inventions?

Seeing

Seeing into what confusion things have run, why should we be surprised if the *licentiate* comport himself as if he were on a par with the *fellow?* Why wonder, that we who have been matured in the regular discipline of episcopalian universities, should be held in scarce higher estimation than those who have but just had time to lick up a mouthful of the husks of science at some presbyterian seminary in the North?

In our early days, when the practitioner proposed to himself either to attenuate or resolve, or inviscate, or obtund; and when he had opened these his *indications*—not indiscreetly, no, *nequid nimis*— to the proper parties, was not as full reliance placed upon his insight, as if he had given them the cause of the disease to hold in the palm of the hand? Wherever he appeared, did he not inspire reverence? the friends—were they not all exp ctation; the attendants---all submission; the patient---all resignation? and he felt comfort even in resigning his breath; so decorously was the art exercised in its minutest particulars!

But now—nor will you, my valued hippocratic friend, call me croaker---such has been the effect of *candour*, discussion, and the univer-

ſal uſe of the vernacular idiom in medical writings, that I queſtion whether *acrimonies vellicating within, and peccant humours bursting their way out*, will paſs much longer, except with gentlewomen about our own ſtanding; though they once could give ſuch univerſal ſatisfaction as to the cauſe of ſymptoms.

Partial friends—you among the reſt—will ſometimes perſuade me that my tracts are models of claſſic elegance, too good for a taſteleſs generation, and therefore not in ſuch high requeſt as they deſerve. In point of years you are *a little* the younger man, and *not a little* in point of conſtitution; you may therefore live to ſee an opportunity of bringing the faculty to a juſter ſenſe of things. Should you at ſuch a moment (excuſe the vanity of my ſuppoſition) think it worth while to revive theſe my lucubrations; and ſhould friendſhip induce you to prefix ſome memorials of the author, extracts from my correſpondence on various occaſions of alarm, *ne quid ars detrimenti capiat*, may, *possibly*, not be out of ſeaſon. You will, I flatter myſelf, find ſomething upon moſt painſworthy points. I will not, I need not, direct *you*, to thoſe which I have moſt happily touched. But do not, I intreat you, omit my kind commendations of thoſe Sages who have ſucceſſively undertaken to ſhew that there is *no*

sedative

sedative virtue in opium, no despumation in the small-pox, no erosive acrimony in pus, no putrefaction of the fluids in any disease, and no vires medicatrices naturæ in any constitution. Digresſively, I believe I may have thrown out ſome ſtrictures upon thoſe other modern teachers, to whom the world is indebted for the information that there is neither *free-will in man, nor phlogiston in charcoal.*

Sed hæc missa faciamus---let this buſineſs paſs for the preſent.---*Gravius instat—periculum* ſhall I add? I ſhould think the term too grave if I had not ſeen equally contemptible beginnings proceed to an iſſue, which it gives me a pang to recollect. *You* thought the difficulty of execution quite ſufficient, and that we need not interfere to diſcountenance----But you now ſee the project, extravagant as it is, can hardly be claſſed among the *dead-born.* From what I hear—*auribus invitis* you may ſwear—even at the Weſt end of the town, I am apt to apprehend ſometimes that it is creeping on and gaining ſtrength.

I do not argue—arguing on ſuch a ſubject I conſider as *infra dignitatem.* Neither do I deſcend to invective, though my indignation be indeed, at times, held in with difficulty. But did you know all, you would ſee that I can

ſtrike a home-blow nevertheleſs. I will explain by an inſtance or two.

Some ſhort time ago after diſpatching the buſineſs on hand, and aſking of the apothecary a few ſlight queſtions about what they call the *yellow* bark, I roſe to go to my carriage. At the door of the room where we had been cloſetted, I ſtopped, turned round my head, and looking ſignificantly ſaid, " well, Mr. DRENCH, perhaps " you may deal with an additional ſpecies of " cortex; intruſions of this kind muſt be ſubmit- " ted to; but have you contrived how you are " to put theſe new *aerial remedies* into ſaline " draughts?" I walked off without waiting for his anſwer, but the next time we met, he ſaid he had reported my queſtion at his pharmaceutical club; and that it not only made the matter *clear** to the underſtanding of the members, but created an hearty laugh into the bargain— You will, I am certain, prefer this mode of attaining the ſame end to that of ———, the apothecary, who being told that one of his patients had been perſuaded to take the vital air, hurried to his houſe and indignantly demanded whether this was really his determination. " If " ſo, ſays he, " here is your bill, and if it be " not paid, I will arreſt you to-morrow."—

This

*If Mr. Drench did not flatter his old friend the Baronet, the heads of the members could not be very *clear*, ſince nothing hinders pharmaceutical gentlemen from diſpenſing airs and they may be conjoined with drugs. T. B.

This was no doubt excellently intended, but was it not too direct? It was the more unlucky, as the patient recovered--by the power of nature beyond a doubt, not by the help of the new-fangled remedy he took.

Well; soon afterwards, the consumptive daughter of Sir ——— ——, who had been under my care for some weeks, was ordered to the Hotwells. Sir ——— asked if he should consult ——, naming the man, out of whose hands, I am most decidedly of opinion, that all physicians, who have the state and stability of their profession at heart, should unite to keep patients. "*To be sure*," I replied, the disease "is always fatal. It is, *in truth*, the very "scourge of our island. *Would to God* some "better means were devised—Researches for "this purpose are *out of all question* laudable. "I *most heartily* wish them success." Having thus tuned their minds to confidence with my key of candour, "but would you, Sir ———," added I emphatically, "or *you*, my lady, have "*experiments* made on your daughter?" My lady shuddered at the question; she even started, nor could her countenance have expressed more horror, if she had actually beheld her daughter in the hands of an assassin. I will

answer

anſwer for it, no *experiment* is performed on this patient.

So much---and enough for example's ſake. A great deal more occurs. The topic is fertile---but *verbum sapienti*.---The new practice will be applied to deſperate caſes principally; and as it can never ſave all the dying, you may conceive we ſhall have plenty of texts for *useful* comments; for it is always our own fault if thoſe who employ *new* remedies without effect, do not appear to diſadvantage, though *we* can do no better with the *old*. All depends on the face we put upon the matter.

Then you know there is the topic of *inexperience*---on this *we* may launch out. We may call aloud for facts, and all the while reject any that ſhall be offered. Naming no names—remember that---let us uſe ſtrong deſignations, as *speculatists*, *enthusiasts*, *high-flyers*. Such language, in the proper tone, will hurry away the mind of the hearer, in ſpite both of his previous conviction and of the guarded terms in which *they* may have expreſſed themſelves.——Beſides how eaſy is it to ſet *Rumour* at work! And if we could condeſcend to look upon *them* as adverſaries, what would this be but juſt retaliation? for you may obſerve in their publications an inſolent neglect of us, who are at the

the head of the profeſſion; nothing ſoothing, nothing conciliatory---no acknowledgment of our ſuperior ſagacity---no deference to our experience. On the contrary, appeals to common ſenſe---a deſign to take public opinion by ſtorm---in ſhort a ſpirit that requires no leſs to be repreſſed than it deſerves to be reprehended.

I had hoped to encloſe, according to your preſſing requeſt, the lines, ending

PROCEED, high-toned enthuſiaſt! coax mankind
With idiot mouth to gape and ſuck the wind;
To each forſaken belle and faded beau,
In Hope's gay glaſs alluring viſions ſhew.
Teach in terſe phraſe how *chemic airs* can ſpread
O'er the wan cheek the roſe's opening red:
Smooth the dull brow: new ſcoop the dimpled cell
Where once a ſmiling Cupid loved to dwell:
In the dim orb the glance of youth relume,
And o'er the features breathe Promethean bloom.
Nor boaſt *thy airs* coſmetic powers alone:
Diſeaſe and vanquiſhed Time their virtues own.
Pneumatic art unfixes Cancer's claw,
And ſhields the victim doomed to Phthiſis' maw.
See Palſy dance! his hollows Macies fill,
And Aſthma pace without a puff up hill!

IF but three thouſand pounds obey thy call,
Mankind ſhall mourn no more old Adam's fall.
Thenceforward—blooming through a ſecond ſpring—
Tenfold the race aſſigned by Iſrael's King
Eve's half-immortal progeny ſhall run
And new METHUSALEMS ſurpriſe the ſun!

---But

——But you muſt adminiſter a lenitive to your curioſity. For my ſtiff old jade mounts ſlowly up the ſteeps of Parnaſſus. I am every now and then as much puzzled for a rhime, as a raw officinal recruit to lay his hand on the right box. Farewell! a friendſhip of fifty years cannot require valedictory aſſeverations.

JERE. MORRISON.

June, 1795.

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CASES

IN ELUCIDATION

OF THE

MEDICINAL EFFECTS

OF

FACTITIOUS AIRS.

HAVING been informed that SIR WM. CHAMBERS, *when labouring under the pressure of unspeakable distress, had derived more than present relief from oxygene air, I requested from him an account of the effects he had experienced from its use. In the 2d Ed. of my* CONSIDERATIONS, p. 158. *I have related my observations in a case of dropsy of the chest. In this case, oxygene air seemed repeatedly to remove the nausea, and for a short time the difficulty of breathing. But it had no effect in emptying the cellular substance of its water, or preventing its accumulation after it had been evacuated by foxglove.*

This is one of those diseases in which I most wish for rooms filled with modified air; as from the diminished capacity of the air-cells, an atmosphere with more oxygene would only bring the patients to an equality with healthy persons, in respect to the quantity of oxygene acting upon the blood, during its passage through the lungs.

T. B.

Letter

Letter from SIR WILLIAM CHAMBERS, *Knight of the Polar Star, F. A. S. &c. &c.*

June 20, 1795.

SIR,

AS every perſon of a benevolent mind and enlarged underſtanding muſt approve of the deſign of thoſe gentlemen, who are endeavouring from a philoſophic induction, to introduce aerial remedies for the removal of otherwiſe incurable diſeaſes, and as my caſe appears ſuch as to demonſtrate the efficacy of the vital air in a diſorder, that has hitherto reſiſted the ableſt practitioners in phyſic, I will attempt, as far as lies in my power, to deſcribe my ſituation, and the effects, which I experienced from this new remedy; I ſhall be truly happy, ſhould the ſame advantages be felt by others under ſimilar circumſtances.

Previous to my coming under Dr. Thornton's care, every means which extenſive experience and great abilities could ſuggeſt, had been tried by my friend Dr. Turton. My complaint ſeemed to be of ſuch a nature, as to baffle all the powers of art. I was at that time hardly able to move from one chair to another. It was with the utmoſt difficulty I could get up ſtairs. I had water in both my lower extremities, and great oppreſſion on my breath, ſo that when I lay down to ſleep, I was frequently obliged to ſtart up and reſume an upright poſture, to prevent myſelf from being, as it were, ſuffocated. My nights were bad, my appetite gone, and for months I had not been able to ſwallow any thing ſolid. Indeed I had given myſelf up as a loſt man, until I heard of the vital air, which my

friends

friends told me had done ſuch extraordinary things in medicine and ſurgery. I conceived that as the application was to the ſeat of the diſeaſe, it promiſed more than moſt other remedies, and accordingly about ten months back I began the inhalation of this air. Dr. Thornton approved of the plan of medicine I was purſuing, which was, bitters to ſtrengthen the ſyſtem, and as occaſion might require, a warm laxative pill ; theſe were therefore continued. After a few weeks' trial of this new mode of treatment by the vital air, the above medicines being continued, my ſtrength was ſo far recruited, that from my own reckoning, I could walk upwards of two miles ; my ancles did not pit ; my breathing was relieved ; my appetite improved and my countenance ſo much mended ; that all my friends, together with my phyſician, congratulated me on my recovery. I was able to pay my reſpects to his Majeſty, who complimented me much on my good looks, and made many inquiries reſpecting the vital air. I was enabled regularly to attend the Board. But I had to battle through ſuch a winter, as few at my time of life have been able to ſupport. The influenza, which was general, was a great drawback to my full reſtoration, as the vital air was obliged to be deſiſted from at that time, and recourſe was had to evacuants, cooling medicines, bliſters, cupping, and a low diet. But this, together with ſeveral colds, that have occaſionally attacked me, has, in my mind, only manifeſted the more the efficacy of the vital air in my complaint, for as ſoon as it has been judged prudent to have again recourſe to the vital air, the ſymptoms that had gained ground during the intermiſſion, have been as conſtantly ſubdued, and my friend Dr. Turton has told me, " that I could not do better

" than

"than to go back to the vital air," to which I do not hesitate to ascribe my present freedom from oppressive respiration, comfortable nights, clean ancles, power of eating solids, with appetite, and in a few words, as much return of health, as a person at my time of life (85) has reason to expect after such an attack, and I think abundantly sufficient to be thankful for, and to prove the virtue of the vital air in all complaints of this nature; but this I must leave to you, Dr. Thornton, and others to determine, to whom I sincerely wish every success in your laudable attempts to lessen the afflictions of mankind, and have the honor to be,

Dear Sir,

Your obedient humble Servant,

WILLIAM CHAMBERS.

To Dr Beddoes.

Observations on this Case, by DR. THORNTON.

1. AS the average dose was 1,500 cubic inches of atmospheric air, super-oxygenated, at first by one, and afterwards by two quarts of *vital air;* does not this case of Anasarca prove, that such a mixture has no contemptible power?

2. As the super-oxygenated air was inhaled at first, for near two months successively, once each day; and afterwards for eight months, three or four times a week, it seems to prove, that this remedy may be employed for a great length of time without injury; care being taken to leave it off when any accidental inflammatory attack supervenes, and when the tongue has a white appearance, in the same way as bark and all other tonic and exciting remedies would be omitted under similar indications.

3. After the inhalation of the super-oxygenated air (the quantity of air usually drawn into the lungs being 4 pints at a forced inspiration) a sense of warmth was diffused throughout the body; Sir William Chambers frequently noticed that the extremities of his fingers, which were before colourless, were suffused with red blood; the small vessels on the surface of the cheeks became more florid; the veins filled out; and the pulse which was 90, and weak, rose in fulness, but diminished in quantity, from six to ten in a minute.

4. Is the removal of the Anasarca; the recovery of muscular power; the increase of strength; to be ascribed solely to the inhalation of a super-oxygenated air?—to the power of tonic remedies?—or to both conjointly?

To the laſt opinion, from an experience of above two years in the pneumatic remedies, I ſubſcribe, but this will be more ſatisfactorily determined by your *Pneumatic Inſtitution.*

5. Was not a deficiency of vital air in the ſyſtem, ſhewn not only from the nature of this diſeaſe; from incapacity for muſcular action; coldneſs of the extremities; defect of colour, which was natural to the cheeks in the ſtate of health; but alſo from the tremulous motion of the hand, when holding the tube connected with the machine for the inhalation of the air; for theſe went off in proportion as the ſyſtem became oxygenated.

6. As the uſual remedies are employed, which the prudent Phyſician preſcribes according to the circumſtances of the caſe; and as the patient loſes no chance in the experiment, and the ſuper-oxygenated air in a ſtate of great dilution, is proved to be by no means a dangerous remedy; have not practitioners great reaſon for adopting in future *this new power* under ſimilar circumſtances?

R. I. T.

7. As patients in general, though warned to the contrary, make greater efforts of reſpiration, when they draw the air out of a reſervoir, does not the ſame quantity of atmoſpheric air oxygenate the ſyſtem more in this mode of adminiſtering it than in ordinary breathing? and may not the exerciſe attending this mode of reſpiration be of ſervice? This laſt circumſtance deſerves attention.

T. B.

Letter

Letter from SAMUEL HILL, ESQ.

June, 20, 1795, Great Suffolk-ſtreet.

SIR,

I ACKNOWLEDGE the honour of your letter, and make not the ſmalleſt heſitation in complying with your requeſt.

Mary Leucraft, the daughter of a tenant of mine, had been ill above three years. Every thing had been tried for her recovery, as far as her mother's reſources would allow of, but her body ſtill remained greatly ſwelled, and ſhe had that ſallow, and, if I may be allowed the expreſſion, flabby appearance, characteriſtic of a perſon in the worſt ſtate of health. As her diſorder had been all along pronounced dropſy, and ſhe had received no benefit from medicine, her mother told me, ſhe had given up every hope of ever ſeeing her child recover; but well knowing the humanity of Dr. Thornton, and thinking, that this caſe would if ſucceſsful, do great credit to the aerial remedy; I ſent her with a letter of recommendation to that Phyſician. She was accepted as a patient, and I ſoon heard ſhe was getting better, and when I ſaw her, I was convinced that ſuch was the caſe; but her mother at this time falling ſick, and being unable to bring her daughter to Dr. Thornton, or to ſpare her from home, ſhe again relapſed into her former condition of ill health. However, upou the recovery of her mother, ſhe renewed her daily attendance.

In about ſix weeks ſhe came to return me, and the ladies belonging to my family, thanks; and we were, I muſt confeſs all of us aſtoniſhed at the change; for from being an object of pity, ſhe was now become of her proper ſize; ſhe ſaid ſhe had an appetite; ſlept well; and ſhe had a moſt blooming complexion.

I have the honour to be, Sir,

With the greateſt reſpect,

Your obedient humble Servant,

SAMUEL HILL.

To Dr. Beddoes.

Observations by DR. THORNTON.

IN this caſe, I evacuated the bowels with rhubarb and cream of tartar, to diſcharge the water and accumulate irritability in the abſorbent and inhalant veſſels, at which time I enjoined the ſpareſt mode of living. Afterwards, I gave bark and ſtimulants, and ordered a generous and plentiful diet, and my patient inhaled 900 cubic inches of air, ſuper-oxygenated by 2 quarts of vital air. By this alteration (to the propriety of which meaſure the Brunonians, or rather the diſciples of yourſelf and Dr. Darwin will readily aſſent) my patient was quickly reſtored to health, as the above letter teſtifies. But how far the ſuper-oxygenated air concurred in this cure, comparative trials muſt determine.

Extract of a Letter from DR. THORNTON, *On Hydrocephalus.*

November 15, 1795.

THOMAS MEAD, a lad, 13 years of age, was six weeks in St. Thomas's Hospital, under the care of Dr. Fordyce. We cannot doubt an instant, but that every proper remedy had been tried before he was discharged thence *incurable*. Being blind, he next came under the care of my friends, Messrs. Wathen and Phipps, who with real love for the improvement of medical science, and a wish to lessen the miseries of suffering humanity, sent him to me, as a fit object for the trial of the pneumatic remedy. The pupils of the eye were greatly dilated, the pulse was sluggish, and he had fits, which were unlike those of epilepsy or hysteria, and usually occurred, at uncertain periods, once or twice a week. These symptoms we know denote water in the head. He inhaled the vital air in the dose of two quarts to thirty-six of common air, and in three days he began to distinguish objects. He then underwent a course of mercury, took bark and bitters, and inhaled the super-oxygenated air. His sight daily became sensibly clearer, the pupils of the eye were less dilated, and he had no recurrence of his fits. His pulse was increased in quantity and vigour. But during these favourable signs, the weather set in extremely bad, and the lad living at a distance from me in the country, he left off attending for some days, and all medicines were in consequence omitted. When the weather became better, in his attempt to visit me, he had a fit on the road, which kept him back a day or two longer, and when I at last saw him, he complained much of

great weight and pain at his forehead; he appeared ſtupid, and had gradually fallen off in his ſight. I began to be very apprehenſive for his ſafety, and cautioned the mother to bring the boy regularly each day. The fits, however, recurred, at firſt once, and then twice a day, with increaſed violence, and the benefits that were kept up during the laſt five weeks were now alas, loſt for ever.

Observations on this Case.

Did not the recovery of ſight in three days during the inhalation of ſuper-oxygenated air ariſe from the power of this elaſtic fluid? and does it not indicate, that it will be of ſervice in this fatal diſeaſe? might not the dropping of ſo powerful an excitement as the combined operation of exerciſe, bark, mercury and a ſuper-oxygenated air occaſion what Dr. Cullen calls the "collapſe" of the ſyſtem, and in ſome meaſure account for the failure in this trial? or might not the ſuper-oxygenated air, without mercury, conjoined with bark have proved ſucceſsful? Theſe intereſting points, more extenſive experience will, I truſt, clear up.

Your's ever,

R. I. THORNTON.

Letter from Dr. Redfearn.

Lynn, Norfolk, 26th *June*, 1795.

SIR,

I SEND you the caſe of Hæmoptyſis which I mentioned in my laſt letter: you will no doubt think it an important one.

I am, Sir, your moſt obedient Servant,

RICHARD REDFEARN.

To Dr. Beddoes.

Mr. B. F. Æt. 23, of a florid complexion narrow cheſt, prominent ſhoulders, ſmooth ſkin, and of a delicate ſlender form, has been afflicted with hæmoptyſis about two years and a half; attended with dyſpnœa, cough, a diſagreeable ſenſe of burning in the cheſt, and expectoration of a purulent nature. P. about 100, and invariably accelerated by the hdc. air---Hectic fever was not completely formed; but he had at times a ſenſe of chillineſs in the day time with heat towards the evening. He began by taking one quart of hydro-carbonate, diluted with twenty-one quarts of atmoſpheric air, once a day. From this mixture he experienced much vertigo during its inhalation, and, two hours after dinner, he ſuddenly became vertiginous, from which, however he ſoon recovered, although a violent head-ache remained during the reſt of the evening.

The following days he only inhaled one pint of hydro-carbonate, mixed with twenty quarts of common air, once a day, which generally affected him with ſome ſlight vertigo and tightneſs over his forehead: the hydro-

hydro-carbonate was increafed gradually to two quarts or more at one dofe, but I find it always neceffary to begin with the original dofe, where the air has been recently generated.

My patient has been perfevering in this plan about three months; and has had no return of hæmorrhage; his cough and expectoration are very much diminifhed; fometimes he does not expectorate more than one table fpoonful in the fpace of three days; he has alfo never experienced any of the diftreffing heats in his cheft which haraffed him before the adminiftration of the air; his dyfpnœa is perfectly removed, he can ride upon horfeback twelve miles without feeling much fatigue; his appetite is very good and he fleeps well: P. 80, he fays he thinks his health is perfectly eftablifhed.

Extracts of letters from DR. ALDERSON, *respecting a case of Chlorosis, a case of Pulmonic Disease, and a cheap Apparatus for the production of elastic fluids.*

Hull, May 29, 1795.

DEAR SIR,

I HAVE had under my care a cafe of apparently approaching phthifis; the complexion was uncommonly florid; the patient has perfectly recovered from the long-continued ufe of hydrogen air.

A cafe of chlorofis has alfo occurred to me in which fteel proved ineffectual without oxygen. The patient

never

never could ſleep without her doſe of this air, of which ſhe inhaled a quart every night. So great were the beating of the carotids, the anxiety and the ſenſe of drowning, when ſhe was about to lie down, that ſhe was under the neceſſity of ſitting up all night, nothing ever procuring reſt, till the oxygen was adminiſtered. Then the beatings ceaſed. She lay down and reſted. She continued the air ſome months. It was aſſiſted by ſmall doſes of ſteel, which ſhe had in vain tried under every formula before. She has ever ſince been healthy and blooming.

I uſe the ſimpleſt contrivance poſſible for every kind of air. I will ſend you a drawing of it, if you think it will be of any ſervice.

I am your's moſt ſincerely,

J. ALDERSON,

June 26, 1795.

DEAR SIR,

MY friend Mr. Mead, who invented the apparatus of which I have now ſent you a drawing, and which I have conſtantly employed, being much engaged in a very intereſting pneumatic purſuit, I have neceſſarily been obliged to poſtpone to this time my promiſed account of the caſes in which I have ſucceſsfully employed factitious airs.

I was ſome time ago called to meet Dr. B. in the caſe of Miſs L. aged 17, who had been long labouring

under

under chlorosis. As my colleague had been for some time administering a variety of very proper tonics, and being at that time persuaded that some preparation of steel would effect a cure, I advised only a different preparation of that mineral, but the change not producing the desired effect, the Doctor ordered some blood to be drawn from the arm, in the hopes that after the evacuation the tonics would have a better effect.— The blood was remarkably pale, and afforded but very little crassamentum indeed; no alteration took place in the system for the better, she then went to sea, and returned from her voyage somewhat better, but soon after relapsed, and the complaint being now attended with great emaciation, and an uncommon throbbing in the carotids, which upon lying down was so very troublesome as to prevent her sleeping, my assistance was again called for in 1793, and having no prejudices to overcome with her very ingenious father, I immediately proposed the inhalation of oxygen gas, the first effect of which was to take off the throbbing of the arteries, enabling her to lie down and to get quiet sleep, the other effects are concisely related by her father, in his letter to me, of which the enclosed is a copy.

She inhaled every night, by means of the funnel, a quart of oxygen, unmixed with any other air, which was sometimes prepared from nitre, and sometimes from manganese by heat.

Note. It may not be amiss to remark, that no air from nitre ought to be kept for use that comes over before the reotrt be perfectly luminous, and even then some

ſome azotic gas will aſcend owing I ſuppoſe to the breaking down of a chryſtal, the center of which has not been thoroughly permeated by the light.

I. A.

To Dr. Beddoes;

Letter from MR. LAMBERT, *to* DR. ALDERSON.

IT is not neceſſary, Sir, that I ſhould attempt to deſcribe to you the nature of my daughter Elizabeth's complaint or to enumerate the various medicines that had been adminiſtered, prior to your ordering the *pure air*. The immediate effect produced by this, was a conſiderable exhileration of her ſpirits: in a few days the violent beating in her head greatly abated—the ends of her fingers began to aſſume their natural colour; and by a ſteady perſeverance in the uſe of it for about two or three months together, with the uſe of ſalt of ſteel, from a ſtate of the greateſt debility, and an appearance the moſt unhealthy, ſhe aſſumed her former colour, ſtrength and vigor. With the deepeſt ſenſe of my great obligation to you,

I remain, Sir,

Your very humble Servant,

G. LAMBERT.

Hull, June 5, 1795.

Extract

Extract of a Letter from Dr. Alderson.

1793.—MISS —— aged 16, had all the symptoms of approaching phthisis, cold tremors about twelve o'clock, fever, heat, and flushing every afternoon, pulse 120, countenance uncommonly florid, breathing rather difficult, cough severe, accompanied with some expectoration; as several of her family had died of consumption, there could be little doubt of the tendency of these symptoms, and after finding nitre, spermaceti, vomits, &c. to have no effect, I advised the inhalation of hydrogen; she daily inhaled a quart of pure hydrogen from water, by every now and then taking an inspiration at the mouth-piece of the tunnel. It frequently occasioned nausea, and even vomiting, but this, I suspect, was occasioned by her every now and then swallowing a portion of it into the stomach. The pulse fell, the flushings and fever subsided, and the whole train of phthisical symptoms left her, but at the expence of her fine florid colour, her countenance having ever since been of a darker tint than before she was ill.

I. A.

To Dr. Beddoes.

June 5, 1795.

DESCRIPTION of a PNEUMATIC APPARATUS.

PLATE I. A. An iron retort or tube clofed at end (1) open at end (2) with a female fcrew to receive the male fcrew of the tube or gun-barrel B. at the fig. 3. the pofition of the fcrew (3) muft be fuch, that the end (4) may be three inches above the bottom (1).

H. A bent iron tube inferted into A. at (5) which receives the cup with the cock C. at the point (6).

D. A crooked tube inferted into the gun-barrel at the point (7).

E. E. Screw-keys or wrenches, the one fitting A. at *a*. the other B. at *b*.

To ufe the veffel, fill A. with the fubftance neceffary to produce the fpecies of air required, to a height, three inches from the bottom; put the apparatus together, ufing a little lute, or flour and water, at the feveral joints: infert A. between the bars of a common grate, to the dotted line F. F. F. and D. into a pail filled with water, as in fig. *f*. When A. has acquired a red heat, if water be neceffary to the production of the air, fill the cup C. with water, turn the cock Z. into fuch a pofition that the water may gently *drop* through the tube X. Infert the tube X. with lute, into the tube H. at the point (6) fill a bottle with water and infert it over the end (8) of the tube D. on the pail G. filled with water.—Note. When the water is not to be ufed fhut the cock Z.

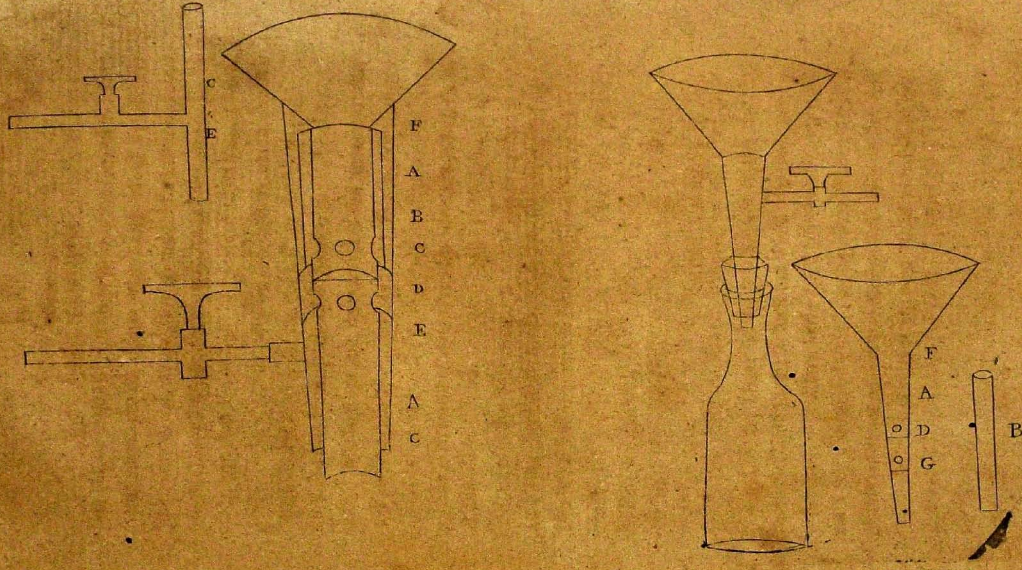
EXPLANATION of PLATE II.

A. A funnel with its pipe or tube ſtopped at D. and perforated above and below with two or three ſmall holes; round the tube A. is ſoldered the tube B. left open at top, the tube C. is made to circumſcribe the tube B. and to be ſoldered to the funnel at *f.* and likewiſe ſoldered at *g.*

When water is poured into the funnel and the cork inſerted into a bottle filled with gas, the water deſcends through the tube A. till it arrives at the diviſion or ſection D. it then flows through the ſmall holes at *a.* and aſcends between the tubes A. and B. flows over the top of B. and deſcends again between the tubes B. and C. till it arrives at *g.* (where it regains the tube through an opening above *g.*) and thence into the bottle: as the water goes in the air eſcapes between the tubes A. and C. through the cock into the mouth-piece; the lower end of C. is made to perforate a cork which is properly attached to it, and which ſecures it air-tight into the neck of a common bottle.

The whole apparatus may be made for leſs than a guinea, and may be introduced to the bedſide of the patient if neceſſary, for I have had a caſk filled inſtead of a bottle, and placed upon a chair; by turning the cock, the patient may take an inſpiration whenever he pleaſes, the cock being thruſt into the ſpiggot-hole.

Pl. 11



Extract of a Letter from DR. THORNTON, *On a Case of Venereal Affection.*

May 3, 1795.

THE practitioner now and then meets with peculiar habits, in which mercury seems to have no action :— and again, other cases in which mercury is immediately carried off by ptyalism, violent sweats, or excessive diarrhœa. In both these states I was desirous to see the vital air tried, but as yet have been able only to observe its salutary effects in the latter instance.

A wealthy merchant of the city of London, after inebriation, became the victim of indiscreet indulgence. Mercury was had recourse to in the form of pills and unguent, but these produced the greatest derangement in his health, and affected almost instantly the salivary glands. The primary symptoms being however subdued, his surgeon, an able and experienced practitioner, thought fit to leave off the mercury, seeing it was so inimical to his constitution; and for some time the patient believed himself safe; but this Proteus disease broke out in another form, and that unfortunately at the time when he had just married. He was salivated again, but could not retain, according to the opinion of Bell, sufficient mercury to establish a cure; or rather the mercurial action was at first too violent and local to be kept up a sufficient time to produce a permanent benefit. Hence this cruel disorder afflicted him for more than the space of two years. When I saw him, the surface of his body was deformed by dreadful blotches ; he had an ulcer on the lungs, attended with a hard cough, and bloody and purulent expectoration ; with

with other horrid marks of this dreadful ſcourge of illicit deſires. Meſſrs. Wathen and Phipps, ſeeing this gentleman in ſo deplorable a ſtate, and having witneſſed the relief, ariſing from the aerial practice, in the caſe of a ſervant maid, whom (though not a ſervant of their family) they humanely lodged in their houſe, and who was in the laſt ſtage of a pulmonary conſumption; adviſed him by all means both to conſult me and Mr. Hill.

From my former reſidence at the Hotwells, near Briſtol, and from frequent converſation wi h the late Dr. Rigg, Phyſician of that place, I was convinced of the fatality of conſumption from venereal ulcers; and though this caſe was not exactly the one I had chalked out in my mind for the firſt trial of the vital air, yet, as perhaps it afforded the only chance of recovery, I urged its uſe. Mr. Hill accordingly gave him each day the ſuper-oxygenated air, in the proportion of two quarts to a thouſand cubic inches of atmoſpheric air; and by way of medicine, he had muriated mercury in the ſtrongeſt decoction of bark, with the cortex, and two grains of opium at night. He was alſo occaſionally purged. By this courſe without any violent effect from the mercury, he was in three weeks clear of all defœdations of the ſkin, and in a month the ulcer on the lungs was healed, and the other marks of venereal affection diſappeared, and in ſix weeks he went to Margate, deeming himſelf perfectly cured.

A queſtion here naturally ariſes, whether the cure in this caſe proceeded from a different adminiſtration of mercury? or from the combined operation of ſuper-oxygenated air? theſe doubts muſt often occur to a private practitioner before the acquiſition of more facts.

I cannot

I cannot conclude this letter without congratulating you on the difcovery that the kali fulphuratum ftops the action of mercury on the fyftem, in a few hours arrefting falivation.

Extract of a Letter from DR. THORNTON,

On a White Swelling.

July 5, 1795.

CAPTAIN ——— of the Devonfhire Militia, was under the care of feveral furgeons, for a white fwelling of the knee, which, as is ufual, increafed, notwithftanding the means employed. Mr. Baftard Member for that county, advifed him to place himfelf under Mr. Hill. After having inhaled the fuper-oxygenated air but a fortnight, and taken a mixture of bark, myrrh, and columbo, his health was reftored and invigorated; the fwelling had gradually decreafed; he could move his limbs without pain or lamenefs; and in three weeks he was perfectly cured.

Ever your's,

R. I. THORNTON.

Extract of a Letter from DR. THORNTON,

On a Case of Cancer attended with Dyspnœa.

BEING requefted to attend with Mr. Hill in a cafe of cancer by my friend Mr. Wathen, I had the pleafure to hear the latter gentleman daily pronounce, that from the inhalation of the fuper-oxygenated air, the open wound had put on a more favourable appearance,

and

and the discharge was more kindly. The health of this Lady was also much mended, and what is remarkable, and can only be ascribed to the effect of the super-oxygenated air, and the most benign of all tonic powers, Hope, though for the last fifteen years, she had been obliged to have recourse to opening pills, her body now had its regular exoneration, without the aid of medicine. But the knotty tumours about the head and neck seemed rapidly to hasten in their progress towards an ulcerous state, and the vital air was in consequence desisted from, and the patient left, alas! to languish in a disease, that, till of late, admitted of neither palliative or cure.

The cancerous case, the object of the present letter, occurred not long after: it was complicated with another malady, hitherto deemed incurable, and one almost equally afflicting. The cancer in this Lady was very large, and the whole of the left breast projected, and pursed in. It was exceedingly painful, and attended with violent dyspnœa; she could obtain little or no sleep, and therefore scarce any respite from misery. —From my experience, as related above, I doubt whether I should have advised the vital air, had not Dr. Ewart candidly communicated the result of his trials with fixed air in open cancer, and had I not myself seen a man whose finger was taken off by Mr. Hill, receive immediate relief from pain by plunging his hand in that species of gas. This case will be more clearly understood by the perusal of the enclosed letter, which I received from her son three weeks after Mrs. Barker had inhaled the super-oxygenated air, which was administered in the proportion of two quarts of vital air, to fifteen hundred cubic inches of common air.

Silver Hall, Isleworth, Jan. 12, 1795.

DEAR SIR,

I SHOULD be very much wanting in gratitude, did I not exprefs to you the very great obligation I feel myfelf under for the benefit my mother has received during the fhort time fhe has been under the care of the furgeon, whom you recommended. Some months previous to her attendance on Mr. Hill, fhe had had the advice of one of the firft phyficians in town, but fo far from receiving benefit from his prefcriptions, they feemed to aggravate her complaint. You may therefore guefs my fatisfaction on obferving the very great alteration produced for the better, by means of the vital air. Before, fhe was in violent and almoft continual pain; fo much fo, that fhe could have no reft at night; all that pain is entirely removed, and fhe now fleeps as found as ever. Before, her ftomach loathed the moft innocent food; now fhe eats indifferently of any thing, and that with pleafure and fatisfaction to herfelf. Her great difficulty in breathing, which more peculiarly oppreffed her at night is wholly removed, for fhe now breathes with the utmoft eafe and freedom. Indeed the alteration is truly extraordinary, and when it is confidered, that this change has been effected in lefs than three weeks, and during weather unufually fevere, alfo on a perfon approaching 70 years of age, whofe health had been long on the decline, it muft be looked upon as the more wonderful. I make not the leaft doubt, but that fo powerful an agent, as the vital air, will be productive of the greateft good to her, as well as many others. With the fincereft acknowledgments for the benefit fhe has already received and many fincere wifhes of future fuccefs,

I have the honour to be, Dear Sir,

Your very obliged humble Servant,

GEORGE BARKER.

The refult of this cafe I fhall hope to communicate with other trials in cancer very foon.

Ever your's,

R. I. THORNTON.

To Dr. Beddoes.

Observation.

This Lady was ordered the decoction of bark, but having a great averfion to medicine, fhe did not take it regularly, and little, I think, can be afcribed to this remedy, at leaft no effect equal to that defcribed in the letter.

Extract of a Letter from MRS. BARRETT.

July 12, *Queen-Square, Westminster.*

SIR,

MY asthma had afflicted me three years. It attacked me very violently at times, the fit going off generally with expectoration, leaving me very low and weak.— The last winter it was uncommonly severe, and, latterly, for months, I had not known what it was to enjoy a comfortable night's rest. As a tradesman in our neighbourhood had been just cured by medicated air of an asthma of thirteen years standing, I resolved to put myself under Dr. Thornton's care, though before this, I had made up my mind to try no more medicines.— I inhaled the vital air from a large bell glass, and its effect was so immediate, that on the second night I slept the whole night through. My attacks were now less frequent, and milder, and pursuing the vital air for six weeks, I got free of my complaint. With the blessing of God, I have continued since in perfect health, except I catch a bad cold, when my asthma recurs, but in a very slight degree.

I am, Sir,

Your obedient humble Servant,

ELIZ. BARRETT.

To Dr. Beddoes.

Observations on this Case, by DR. THORNTON.

1. THIS caſe bears a great reſemblance to the caſe of the Rev. Dr. ——, which is recorded by Mr. Townſend, in his Guide to Health, and the indications being the ſame, the ſame plan of cure was purſued. The air this Lady inhaled, was two quarts of vital air to 1500 pints of common air.

2. It was remarkable at firſt, how long a time ſhe took to conſume this quantity of air. As her complexion, which was at firſt livid, began to clear, I remarked, ſhe conſumed the air much faſter.

3. The tradeſman, whom Mrs. Barrett mentions in her letter, is a baker. He certainly obtained conſiderable benefit, and when I ſent on the 20th of July, 1795, to inquire how he continued, the anſwer returned was, " that he had not enjoyed ſuch health, as at preſent, for years."

A Letter from the REV. JOS. TOWNSEND.

Pewsey, July 21, 1795.

DEAR SIR,

WHEN I was in town, Dec. 15, I called on Mr. Hill, and finding him engaged with patients, I went into the parlour, where I met with Mr. Atwood. We ſoon entered into converſation, when he communicated his apprehenſions of loſing his leg, and aſked me if I believed that the vital air could effect any thing in ſuch a caſe. Finding this Gentleman deſirous of having my

my opinion, I explained to him, that though ſpirituous and other ſtimulating applications might call forth for a time, the action of a part, in which the vital energy was much diminiſhed; yet, as exhauſting it without producing action ſufficient for a cure, a proportionable debility and tendency to gangrene muſt enſue.

This, Sir, ſaid he, is exactly my caſe. After every application, exciting pain, black parts have conſtantly appeared, which were either taken away by the knife, or elſe ſloughed off.

It is ſo, ſaid I, with *spontaneous* mortification: it is preceded, in weak habits, by inflammation accompanied by a proportionate loſs of power. But when the air is rendered by the chemiſt more replete with that ſubſtance, which is eſſential to vitality and is inhaled by the lungs, this alters the diſpoſition of the ſyſtem, and produces what has been called the phlogiſtic diatheſis, whereby the exhalent arteries pour forth inſtead of ſerum, coagulable lymph; the abſorbents carry away diſeaſed parts; and the lymph being rendered more tenacious, is converted into granulations. In the new mode of treatment with vital air, energetic action in the part is ſupported by the ſyſtem: in the old practice it is kept up for a ſhort time only, by partial ſtimuli on weak and diſeaſed veſſels. There it is produced with a change of the blood; here it deprives the blood of life: there it produces energy; here it excites irritation: there it aids the efforts of nature, and renders them effectual; here it calls her into action, which ſhe is unable to ſupport.

This

This reaſoning ſeemed to have weight with him, and here our converſation was interrupted by a meſſage from Mr. Hill, that he was ready to attend his patient. However I begged permiſſion of Mr. Atwood to ſee his wounds, which emitted a very offenſive fœtor, and had diſcoloured his ſtocking. But no ſooner were the applications taken off than the fœtor became intolerable, and the ſight ſo diſguſting, that I was conſtrained to haſten into the open air.

On my return to London, Jan. 15, I was impatient to know what had been the iſſue, and gave Mr. Atwood the meeting as before at Mr. Hill's. The leſſer of the wounds was healed, and bore the friction of a bruſh. The larger wound, ſo well deſcribed by Mr. Corp, was filled and covered with ſkin, excepting one place the ſize of my nail, which he told me was occaſioned by ſome accident.

I was equally pleaſed this day with having a ſight of Patterſon, whoſe caſe I had heard related at Wathen and Phipps's in Pall Mall, and have ſince ſeen deſcribed by Dr. Thornton. His leg, now healed, ſhewed what had been the extent of his former ulcer; his face was clear, and when I put a little bit of paper on the ground, he ſaw well enough to go and pick it up. As I examined his eye, I diſcovered ſtill ſome degree of opacity in the cryſtalline lens.

To demonſtrate, that the inſpiration of vital air increaſes heat, I ſhall trouble you with one fact, from a caſe of melancholia, communicated to me by Dr. Thornton, for the ſecond volume of my Guide to Health.

Mr.

Mr. Windy, from being hypochondriacal, became perfectly infane. He was gloomy, fullen, and filent, or muttered only expreffions, which evinced what were the terrors of his difturbed imagination. He had no recollection of his wife or children, and the only notice he took of his attendants, was to manifeft fufpicion that they meant to injure him. He made feveral attempts to deftroy himfelf. He was coftive, and had remarkable coldnefs of the extremities.

As Dr. Thornton had fucceeded fo well with the vital air, in the cafe of Mr. Ruffel, defcribed in the firft volume of my Guide to Health, printed for Johnfon, in St. Paul's Church-yard, and Robinfon, Paternofter-row, he determined to give it a fair trial in the prefent inftance. He began therefore with giving four quarts of vital air to ten quarts of common air, which produced no change.—He then gave ether and brandy, hoping thereby to increafe the vital heat, but without the leaft effect, for his hands continued cold as clay.—Thus difappointed in his firft efforts to relieve his patient, he gave an emetic in the evening, which brought up a vaft quantity of vifcid mucus. At bedtime he ordered a calomel pill, which was worked off in the morning with rhubarb and fal polychreft. Having thus cleanfed the alimentary canal, he gave the day following ether and brandy as before, and caufed his patient to inhale the fame quantity of vital air, which inftantly produced a genial warmth extending to his fingers ends. Nor was this a tranfitory effect, for it continued all the time he was under the care of Dr. Thornton.

For

For the sequel of this case I shall refer you to the second volume of my work, which I shall before Christmas have the pleasure to present to you, and in which for the benefit of students I shall illustrate and explain this wonderful phœnomenon.

I am authorized to say, that Mr. Atwood inhaled upon an average each day, two quarts of vital air, to 400 quarts of atmospheric air, and that Patterson inhaled two quarts of vital air to sixty of atmospheric.

I am, dear Sir,

Your Friend and Servant,

JOSEPH TOWNSEND.

To Dr. Beddoes.

Letter from Mr. DANBY, *to* Dr. BEDDOES.

Upper John-street, July 19, 1795.

SIR,

I HAD the honour of receiving your letter, in which you request my case, and an account of the effects that the vital air had on me. I have accordingly drawn up the narrative which I enclose.

I went the latter end of July, 1794, in tolerable health to ——. Not designing to stay there long, I took up my abode at an inn in the town. As was my custom at these places, I ordered port wine after dinner and supper; I observed the wine had a peculiar sweet and soft flavour, which was very unusual and agreeable

agreeable, but I by no means drank of it to excefs.— On the third day after my arrival I was feized with tremors, and having taken up a pen to write out fome mufic, to my great alarm, I found I could not accomplifh it. The friend who was with me, complained at the fame time of a moft violent bowel complaint, with great griping and copious evacuations. I was foon after feized with fpafms, and loft the ufe of both hands and feet. I proceeded on to Lymington, and having confulted a phyfician there, was ordered bark and fea bathing. I went then to the Ifle of Wight, and attempted to bathe once, and immediately perceived a great increafe of my difeafe. I therefore haftened back to town, and as foon as Dr. Rowley heard that I was in a moft deplorable ftate, with that humanity fo confpicuous in his difpofition and character, he voluntarily came to offer me his fervices, and with the greateft kindnefs vifited me both in town and country. But notwithftanding thofe remedies, which I have not the fmalleft doubt were the moft promifing of the pharmacopœia, yet my diforder kept on advancing, and as I had been taking drugs for five months without benefit, I grew very anxious to make trial of the vital air, which had been of the greateft fervice to fome of my friends. But I did not choofe to enter into any new fcheme, without firft confulting my friend Dr. Rowley, who fo far from objecting to it, wifhed me by all means to make trial of the vital air. I waited therefore upon Dr. Thornton. It was the beginning of December. My hands were pendulous, fo that I was obliged to be fed, dreffed, and undreffed, like a child; being quite helplefs, having no ufe of my limbs, I was alfo obliged to be carried from place to place; my countenance

countenance, as well as I can exprefs it, was of a black yellow; my appetite gone; and my nights truly dreadful. Counting the hours as they paffed, I repeatedly prayed for morning, which was no fooner come, than I hurried from my place, as I called it, of torment. You will fcarce credit the affertion. A week had not paffed from the time of my firft inhaling the vital air, before my appetite returned, and my nights were rendered fo comfortable and refrefhing, that my wife could fcarce get me up at a reafonable hour in the morning—bed was become fuch an indulgence! my fpirits, as you might expect, were very great; my appetite the fame; and my family obferved that my countenance was confiderably mended. Before the month was out, the motion of my hands was fo far reftored, that I could compofe catches and glees, and in fix weeks I began to employ my crutches. My general health is at the prefent time fully eftablifhed, and Dr. Rowley fays, "I ail nothing now but weaknefs, the confequence of previous indifpofition."

I have the honour to be, Sir,

With the higheft refpect,

Your obedient humble Servant,

JOHN DANBY.

Obfervations

Observations on this Case, by Dr. THORNTON.

1. DID not this paralyſis ariſe from the poiſon of ſugar of lead? An acquaintance of Mr. Danby, who went *since* to the ſame inn, was ſeized with ſimilar ſymptoms. Several medical men, who had no knowledge of the ſtory, have aſked him, "whether his phyſicians did not think he had been poiſoned by lead?"

2. If this was truly the caſe, what would be the probable effect of ſea-bathing? Dr. Johnſon, a young phyſician of riſing reputation, when at Cambridge, took a dog and poiſoned him with ſugar of lead; he was affected with paralyſis. He opened the window and door, and admitted a current of cold air, when the paralyſis became *more violent*, and the animal ſoon expired.

3. Dr. Rowley had tried tonic medicines, as bark, ſteel, and bitters, in various forms; and afterwards mercury as an alterative, with the intention, as I ſuppoſe, of giving irritability to the ſyſtem. What might have been the effect of a conjunction of the two means?

4. Or was it neceſſary to oxygenate by the lungs, the organ ſuppoſed by ſome ſolely appropriated in cold climates to that purpoſe? (vide Medical Extracts, page 106). I have ſome grounds for ſuſpecting this, for I left off the ſuper-oxygenated air, and gave in the room of it, nitre and acids, but it produced ſo great a derangement in Mr. D.'s conſtitution, that it was obliged to be deſiſted from, and I muſt obſerve, that the mercury by itſelf, though indicated, ſeemed to aggravate the diſeaſe.

5. This

5. This case affords a very striking instance of the different effects of modified air of different degrees.— When Mr. Danby inhaled as a dose, two quarts of modified air to 800 pints of atmospheric air, he generally afterwards experienced a comfortable glow, which extended, as he himself used to express it, to his fingers' ends. But when I attempted three different times to augment the dose to three quarts of vital air to sixty pints of atmospheric air, he was, after inhaling it, seized each time with excruciating and wandering pains, and passed a feverish night, and I was obliged to return to the former dose, and I must observe he always saw me prepare the mixture of airs, from the beginning to the end of his attendance on me. The medicines I prescribed were bark with other tonic powers; and costiveness was obviated by those cathartics in which the acid or oxygenous principle predominates.

Extract of a Letter from Mr. WATT, *Engineer, to* Dr. THORNTON.

Heathfield, Birmingham, July 13, 1795.

DEAR SIR,

I AGREE perfectly with you, that the artificial air should be given much diluted with common air, and whether that has been yet carried *far enough* does not appear certain to me. I was convinced of the advantage of dilution from experiment, as well as from reasoning a priori; for if a man breathes any mixture containing much oxygene, he will expire the air highly oxygenated, therefore the oxygene has not been absorbed, and could only act by its immediate stimulus, and

and not by affecting the blood materially, whereas had the fame quantity of oxygene been diluted with more common air, it would have been longer in being breathed, and would have had more time to act upon the lungs and be abforbed. The fame is the cafe with hydro-carbonate, if taken little diluted, the greateft part is expired without having had any action, but by dilution time is given, and there is a continued action upon the blood, which though lefs violent in its immediate effects, lafts longer and feems more friendly. All this leads to the conclufion, that when thefe airs are breathed, the patient fhould retain them in his lungs a a longer time than ufual; and it is probable alfo, that by deep infpirations many of the fmall veficles of the lungs may become diftended, which do not commonly expand, and may retain the factitious airs for abforption; hence the frequent return of vertigo after inhaling the hydro-carbonate by forced infpirations.—— Your experiments feem to confirm, what I have been faying.

You will fee from all this, that I highly approve of your mode of proceeding, by confiderable dilution of the airs: and by fair and minute reprefentations of fymptoms, dofes, and facts, to which if it were convenient to add your obfervations on the circumftances of the preparations of the air, it would ftill further the fcience.

Heartily wifhing every fuccefs to your endeavours for the benefit of mankind,

I remain refpectfully, &c.

JAMES WATT.

Obfervations

Observation by Dr. Thornton.

IS not this reaſoning conſiderably in favour of a Pneumatic Inſtitution, in which the vital, hydro-carbonate, hydrogene, fixed, and other airs, will undergo a very great dilution, and be longer inſpired? this remark will be ſtrengthened when I come to a caſe of pleuriſy, in which I made experience of the effects of a reduced atmoſphere.

In a letter dated July 23d, 1795, Dr. Thornton obſerves, "that the lungs of a frog are really two bags: "therefore little oxygene is abſorbed. The more "lungs are honey-combed or divided into partitions, "the larger ſurface do they afford, for the abſorption "of oxygene. In broken-winded horſes, as I know "from diſſection, five or ſix cells run into one. The "lungs in this inſtance bear a greater reſemblance to "thoſe of the turtle, than in horſes not broken "winded."

Letter from Mr. Watt.

Birmingham, June 24, 1795.

DEAR SIR,

I AM glad to hear that you propoſe ſoon to publiſh an appendix or ſupplement to the ſecond edition of your Considerations. If you approve of the following cautions, as I think you will, I beg that you will inſert them, although they are moſtly a repetition of what has been already printed, but too little attended to by ſome uſers of the pneumatic apparatus.

1. OXYGENE AIR is ſubject to be debaſed with fixed air, if any inflammable matter be mixed with the mangaueſe from which it is procured, (which may frequently happen by accident), or when it is prepared in a new fire-tube, or one in which hydro-carbonate has been prepared; in all theſe caſes, the quantity of oxygene air produced, will be much leſs than would otherwiſe be yielded by the ſame quantity of manganeſe.—This ſpecies of air when freſh made, alſo contains a large quantity of manganeſe in a ſtate of ſuſpenſion, which it depoſits upon being kept ſome hours at reſt.

It has been found by ſeveral patients, that the freſh-made air containing the ſuſpended manganeſe occaſions a diſagreable ſickneſs, and that which contains much fixed air, occaſions ſickneſs and pains in the breaſt, which do not entirely ſubſide for ſome days, though they do not ſeem to be of a malignant nature.

I ſuſpect therefore that ſome unpleaſant effects which have been imputed to oxygene air, may have been owing to one or both of theſe cauſes; and therefore recommend, that in preparing this air, there ſhould always be ſome cauſtic lime well mixed in the water of the refrigeratory, and kept ſuſpended by a gentle motion of the agitator, and that when the air is procured it ſhould be well ſhaken with ſome quick lime and water in the air holder, in which it ſhould be kept twelve hours before it is uſed, ſhaking it well from time to time. To theſe add the precaution of appropriating a fire-tube ſolely to the preparation of oxygene, and it will be attained free from any noxious admixture.

HYDRO-

HYDRO-CARBONATE AIR is alſo ſubject to an admixture of fixed air, which from the relations of intelligent practitioners, ſeems to diminiſh its efficacy, and may not in many caſes be proper to be adminiſtered where hydro-carbonate is uſeful. I am aſſured by Mr. Barr, that to procure this air (hydro-carbonate) of a good quality, the water ſhould be admitted ſo ſlowly, that it may require twenty minutes to procure one full of the large bellows, and that when longer time was employed, in conſequence of a ſlower admiſſion of water, the air was ſtill more efficacious.

I recommend the ſame precautions of mixing lime in the water of the refrigeratory, and of ſhaking the hydro-carbonate with lime and water in the air-holder, as for the oxygene; but I am not enabled to decide whether it is neceſſary to keep the air till it depoſits its charcoal, ſome Gentlemen think that on the contrary, it is beſt to uſe it when freſh made.

The great powers of the hydro-carbonate air require the doſe to be meaſured with the utmoſt accuracy, I therefore recommend that it be always meaſured out of the air-holder, by pouring in the meaſure of water as directed, and never meaſured by means of the hydraulic bellows, which is not ſo exact a method, eſpecially when the diameter is large.

The charcoal from which this air is prepared, ſhould always be previouſly well calcined, as empyreumatic vapours from half burnt wood, appear to be very deleterious; perhaps *they* may have their virtues, but it is deſirable to know exactly what is adminiſtered, and the virtues of ſuch airs may be very different from thoſe of the hydro-carbonate. J. W.

To Dr. Beddoes.

Caution

Caution from Mr. Watt.

THE utmoſt care ſhould be taken that no bits of coals, charcoal, wood, or other inflammable matter be mixed with the manganeſe in preparing oxygene air, and that none of the linſeed oil of the fat lute penetrate into the fire-tube: when any of theſe ſubſtances are mixed with the manganeſe, fixed air is produced, of an extremely pungent quality, and which it is apprehended will prove extremely detrimental in the generality of the caſes in which oxygene air would be directed.

Imperfectly burnt charcoal, or mixtures of oily ſubſtances with it, are hurtful in preparing hydro-carbonate; therefore it is hoped that the cautions given on that ſubject, as well as upon the preparing it free from fixed air will be attended to, and theſe repetitions excuſed. A patient who prepared oxygene air for himſelf, found it one day ſo pungent as to occaſion a ſenſe of burning in his lungs. The manganeſe was inſpected and a ſample ſent me. On examination I found it to contain nothing but manganeſe and iron as uſual.—There were no heterogeneous mixtures in the hogſhead out of which it was taken. Some mixture of inflammable matter I therefore conceive muſt have happened; and I know the fixed air ſo produced is too pungent to be ſmelled to.

J. W.

Extract of a Letter from DR. THORNTON, *On Catarrh.*

March 23, 1795.

I AM ſorry that the one I encloſe is a ſolitary caſe, but trials of this ſort may be eaſily multiplied, I can ſee no harm in publiſhing new trials provided theſe be accurate, and the trial is attended with ſo little proſpect of danger to the patient as in the preſent inſtance.

March 21, 1795, *Hollywell-ſtreet, Strand.*

SIR,

AS DR. THORNTON has requeſted me to relate to you my caſe, and as the communication may be of ſervice to others, I will give it as well as I am able, hoping for the indulgence of the critical reader, from the conſideration of the motive that has induced me to make it public. On the 18th of this month, I was for ſome time in a large room, which was much crowded and very warm. When I came out of this place, I perceived the wind to be very cold. It was eaſterly and I had to face it as I returned home. Upon getting into bed I took ſome brandy and water, and ſoon after felt myſelf uncomfortable and reſtleſs. On the next morning when I awoke I coughed frequently, and threw up a thin tranſparent mucus, which came up freely and with no pain. I was convinced I had caught a bad cold, for my colds are uncommonly ſevere, and theſe are the conſtant ſymptoms of their having ſeized me. The next morning after breakfaſt, my breaſt was very ſore, and my cough very troubleſome and painful.

The

The mucus became glutinous and ſomewhat difficult to diſcharge. After I had dined, and drank three glaſſes of wine, the oppreſſion and pain increaſed in ſeverity. Believing now I had an inflammation of the lungs from the pungency of the pain, I haſtened to ſee Dr. Thornton, who made me inhale the vapour of æther. I received from it almoſt immediate relief, both with reſpect to the oppreſſion as well as the pain in my breaſt. Neverthele ſs I continued much affected all the evening, and coughed a great deal, and when I expectorated I felt a ſoreneſs at my breaſt. Before I went to reſt I put my feet in warm water above half an hour, and took ſome warm gruel in bed. All this I have often done before, when ſo attacked, but ſeldom found much relief from it. I had recourſe again, as directed, to the vapour of æther, and inhaled two tea-ſpoonfuls, which again gave me the ſame immediate relief as before. I very ſoon after fell aſleep, had a good night's reſt, and when I awoke in the morning, inſtead of difficulty of breathing, a long fit of coughing, my breath hot, my tongue dry and parched, as had been invariably the caſe after ſuch ſymptoms as above deſcribed, I breathed, on the contrary, freely, coughed only once or twice, and proceeded throughout the day in my buſineſs, without the ſmalleſt inconvenience.

I am, Sir,

Your obedient humble Servant,

THO. WINNE TOWNSEND.

To Dr. Beddoes.

Observations on this Case by DR. THORNTON.

1. THE manner of inhalation is very ſimple. Two tea-ſpoonfuls of æther are put into a tea pot. This is held near a candle, and the thumb is put over the ſpout. When the vapour begins to preſs upon the thumb, it is transferred to the mouth, and the air is drawn into the lungs. This is to be repeated until the whole be conſumed, or eaſe acquired.

2. That the vapour of æther is inflammable air we have the following proof.—I had often put æther into phials containing oxygen air, with a view to produce an exploſion, but it never exhibited any other phœnomenon than a blue lambent flame. One day having waſhed out a phial that contained æther, I tranſferred into it the vital air, and by way of ſhewing the properties of this gas, having blown out a lighted match, I conveyed the burnt end into the phial of oxygen air, but unexpectedly, inſtead of the match rekindling, a moſt violent exploſion took place. I then put two drops of æther into a ſtronger phial containing this air, and having warmed it with my hand, upon transferring the red-hot part of a match into the oxygen gas, it produced an exploſion nearly as loud as a gun: the match is ſhivered, caloric is diſengaged, water is formed, and the remaining air, after this proceſs, is incapable of ſupporting combuſtion. As the phial in this inſtance did not burſt, I have frequently repeated the experiment, and have always found that one drop of æther to an ounce meaſure of vital air, will produce the ſame phœnomena.

3. In a defluxion of the noſe, may not the morbid ſecretion be thickened, by ſtopping the mouth, and drawing

drawing up an atmoſphere chiefly compoſed of fixed air? Chemiſtry, I believe, points out this as very probable; but ſuch conjectures will be at once determined by a proper public eſtabliſhment.

Letter from Dr. THORNTON.

July 27, 1795, Great Ruſſel-ſtreet.

DEAR SIR,

IN your letter to Dr. Darwin, dated June 20, 1793, having ſtated the reaſons that inclined you to think, "that in a certain claſs of conſumptive patients, there "may be a ſuper-oxygenation of the ſyſtem;" you ſubjoin, "that in conſtitutions injured by opium or "exceſs of ſpirituous liquors, (and more eſpecially "while they are under the operation of ſuch liquors "or drugs) there probably exiſts a deficiency of oxy-"gene." The manner in which you attempt to prove theſe poſitions ſtruck me much, and the following facts will, I think, tend in ſome meaſure to ſupport the latter opinion.

Miſs F—— came purpoſely from Edinburgh, attended by her mother, to be under the care of Meſſrs. Wathen and Phipps. Labouring under a dreadful ophthalmia, ſhe had been excluded for the laſt ſix months from the cheerful ſtimulus of light. Living in a confined ſituation in London, and unable to uſe exerciſe abroad, ſhe had been conſtantly breathing a corrupt air. Seeing her worn down by pain; nearly deſerted by hope; deprived of ſleep, though ſhe took large doſes of opium; tormented with head-ache in the

the morning ; and without the leaſt appetite during the day, Meſſrs. Wathen and Phipps did not think ſhe would ſurvive many days. Being called in by theſe Gentlemen I beheld the image of patience and wretchedneſs. The Lady's countenance and lips were pallid in the extreme. Her pulſe was almoſt too weak to be diſcovered. I before obſerved that Miſs F—— was in the habit of taking laudanum every evening, the quantity was 110 drops, from which ſhe latterly obtained but little ſleep. After inhaling the ſuper-oxygenated air her pulſe evidently increaſed in fulneſs ; her ſpirits were rouſed ; her appetite in ſome meaſure returned ; and a leſs quantity of laudanum would produce the deſired effect.

I am, &c.

R. I. THORNTON.

To Dr. Beddoes.

Obſervations on this Caſe, made by Dr. THORNTON, *and* Meſſrs. WATHEN *and* PHIPPS.

1. FROM local fulneſs we judged it prudent to take blood from the eyes of Miſs F——. Her blood at firſt hardly coloured a white handkerchief ; ſoon after ſhe had inhaled the ſuper-oxygenated air, it ſlightly tinged it ; and in a fortnight the blood became of its right florid hue. WATHEN and PHIPPS.

2. The doſe of air given was from two to four pints of vital air, and leſs diluted than with moſt other patients. This was very ſpeedily conſumed.

3. Why the vital air is favourable to ſleep would deſerve to be explained. Nurſes, who are actuated by

no

no principle but obfervation, when they want to get an infant to fleep, carry it into the *open air*; for the fame purpofe they fing to it, or dance it about. Now are not thefe powerful ftimuli exhaufting irritability, which predifpofes to fleep? The partial abftraction of the ftimulus of vital air alfo produces the fame effect, and more immediately, which was an improvement in medicine, firft fuggefted by you, and will, probably, in cafes where ftimuli are to be feared, fuperfede the ufe of opium: in the mean time it may not be difadvantageous to know how to obviate the after-evil of this prevailing medicine.

R. I. THORNTON.

Letter from MAJOR BRAITHWAITE.

Stratton-ftreet, July 24, 1795.

SIR,

AS I had for a confiderable time been troubled with rheumatic pains, it was recommended to me to take a mild opiate every night on going to bed, and in the event of that dofe not proving fufficiently foporific, I was to add to it a few drops of laudanum; for which purpofe I had procured a two ounce phial of laudanum, expecting to take a journey, where it might not be in my power always to procure medicine equally good of the kind. Neverthelefs being unwilling to accuftom myfelf to the ufe of opium, I generally poftponed taking the opiate till extreme pain and want of fleep rendered it abfolutely neceffary. In one of thofe moments, about four o'clock in the morning, I reached out my hand to the night table, on which by miftake my fervant had placed the phial containing the

two

two ounces of laudanum, and believing this to be my ufual night-draught, I poured the contents into a tumbler glafs and drank it off. I foon perceived my miftake, not only from the tafte of the laudanum, but from my immediate relief from pain. From a certain pleafing languor, it was fome time before I could roufe myfelf fufficiently to ring the bell for affiftance.— being however perfectly convinced within myfelf, that I muft foon, unlefs my ftomach was eafed of the poifon, beat a quick march into the other world, I made this effort and ordered fome warm water ; it was fome time before it could be got ready. As foon as it was brought I drank large quantities, but without any apparent effect. The apothecary was fent for, he gave me feveral ftrong emetics before they took any effect, when I brought up a confiderable quantity of laudanum. I afterwards had a profound fleep, and very early in the morning inhaled the vital air, which was adminiftered by Dr. Thornton, who ordered me to drink lemonade, which from the weak ftate of my ftomach, was almoft as fpeedily rejected, but *perfectly sweet* to the tafte, and fo *deprived* of *all acidity* as left me no doubt of what I caft up being only fugar and water. This was frequently repeated with always the fame refult. In the evening I eat my dinner without any fenfible difference, and felt the next day much as ufual. This is the fimple fact to the beft of my remembrance. If it can be of any ufe in a fcience, which has for its object the eafe and happinefs of mankind, I fhall always look back with pleafure to an accident, which has afforded me an opportunity of giving you this detail. I am, &c.

GEO. CHA. BRAITHWAITE.

To Dr. Beddoes.

Observations on this Case, by Dr. THORNTON.

1. AS more than an hour had elapſed before the emetic was adminiſtered, the opium though much diluted, muſt have taken conſiderable effect, and was not this proved by the quantity of vitriolated zinc neceſſary to be given, which the apothecary ſaid was ſufficient to vomit ſix ſtrong men?

2. Major Braithwaite's pulſe, which was commonly ſlow and full, was when I felt it, very quick and fluttering. Upon inhaling the ſuper-oxygenated air, I carefully obſerved by my ſtop watch, that it was diminiſhed near 15 beats in a minute; it alſo acquired fulneſs.

3. This Gentleman inhaled ſix pints of vital air, but little diluted with atmoſpheric air, we were both ſurpriſed to ſee how ſpeedily it was conſumed!

4. This inhalation gave great refreſhment for the time, as did the lemonade, which was taken into the ſtomach moderately warm: The idea of lemonade I derived from you.

5. Does not this caſe render it probable that opium diſoxygenates the ſyſtem?

Mr. BOOTHBY CLOPTON's *replies to queries respecting his personal experience of the inhalation of vital air.*

HAVING written a letter propoſing queries to Mr. Boothby Clopton, I received the following very ſatisfactory anſwers.

R. I. T.

July 19.

July 19.

SIR,

AS Sir William Chambers, and other Gentlemen of rank and character in England, have consented to authenticate the effects of the vital and other aerial remedies on themselves, and as my motive for this application is no other than the extension of the most important of the sciences, I am emboldened to request the same favor of you. You, Sir, are so well known to move in the highest sphere of life, that your testimony will greatly contribute to draw attention towards an investigation, which I have no doubt will finally be productive of the greatest general good. Permit me then to request your answer to the following queries.

1 What was the nature of your indisposition?

Ans. Asthma, accompanied with great debility.

2. How long had you been ill previous to your coming under my care?

Ans. Seven months.

3. Did the Gentleman, who attended you, make any objection to your trying the vital air, or did he suppose other medicines would have had equal efficacy?

Ans. Mr. Farquhar had no objection, medicines having been so long used without effect.

4. Was the disease after a time alleviated?

Ans. Immediately on my inhaling the air; I was less oppressed with asthma, and slept better the first night than I had done for seven months.

5. Did you find any alteration in your ſtrength and ſpirits?

Anſ. My ſtrength and ſpirits were certainly increaſed.

6. Did your friends obſerve any alteration in your countenance?

Anſ. Not only in my countenance, but in my perſon, for my nights being rendered good, I increaſed conſiderably in weight.

7. Has the advantage been permanent?

Anſ. I inhaled the vital air in the winter, and am now in perfect health, and as I took no medicine, I am convinced my recovery proceeds from inhaling the vital air.

Letter from Mr. COOPER.

Dacre-ſtreet, Weſtminſter, July 29, 1795.

SIR,

I WAS above nine months afflicted with hard tumours, which were very ſlow to ſuppurate, and when they did, produced only a watery diſcharge, and a ſore, that took a long time in healing. Theſe appeared chiefly about the mouth and throat. Previous to this, I had frequent eruptions on my face, for which I was often purged and bled, which in my opinion might have brought on the diſorder I am attempting to deſcribe to you. It ſoon became neceſſary to try every means to get rid of it, and I took a vaſt quantity of different medicines; but the tumours continued rather to increaſe in ſize and number, and produced a conti-

nual inconvenience to me. As the vital air alters the character of the blood, and I conceived my case arose from a broken state of the blood, I waited on Dr. Thornton, who thinking these tumours very likely to be removed by the air, wished me to make the trial. At that time several of the tumours were commencing, others were upon the point of breaking, and others again were in a state of open sore. My bowels were first cleared, and I inhaled the vital air, and took bark twice a day in powder. The effect the air had on me was as my mother and sister observed, to make me eat more than usual. I felt uncommon spirits, and no longer complained of chilliness. The tumours that were in their first state disappeared; the others looked redder and gave me more pain, and discharged matter. But in a fortnight these also yielded to the air and disappeared, and I was cured. But what surprised me most was the change it produced in my eye sight. My eyes for the space of fifteen years had been uncommonly weak; so weak, that I was never able to read or write by candle light, but from inhaling the vital air, they have acquired such strength, that latterly I I have sat up writing in my books, sometimes from twelve to one o'clock, without feeling the sight the least fatigued. My mother used to attribute my weakness of sight, to my having had the measles very bad. I am at the present time perfectly well, and without any fear of my former afflicting disorder.

I am, Sir, with the greatest respect, &c.

HENRY FREDERICK COOPER.

To Dr. Beddoes.

Observations

Observations on this Case, by DR. THORNTON.

1. This cure was eſtabliſhed in Nov. 1793, when it was my cuſtom in breaking the balance of the conſtituent parts of the air, to incline more to the ſide of the vital air, and the patient inhaled daily 300 pints of common air, ſuper-oxygenated by four quarts of vital air.

2. Scrophulous tumours you have conjectured to ariſe "from a deficiency of oxygene, occaſioning inirritability in the ſyſtem." Was not this indicated by the blueneſs of Mr. Cooper's countenance; the ſlowneſs of his pulſe; the torpor of the tumours; and the weakneſs of his ſight, incapable of ſupporting the ſtimulus of a ſtrong light, for theſe diſappeared in proportion as his ſyſtem became oxygenated and the fibres ſtrengthened?

3. Having twice ſtimulated the ſeveral tumours with a ſolution of the oxyd of mercury, ſo as to produce ſome external inflammation, are we not to attribute ſome part of *their* cure to that proceſs?

R. I. T.

4. It is hardly neceſſary to point out to the reader, the inference deducible from this important communication with reſpect to the uſe of vital air in a well-known ſpecies of ophthalmia.

T. B.

Letter

Letter from Mrs. BENHAM.

July 9, 1795, *Fore-ſtreet.*

SIR,

I have been from my earlieſt youth terribly diſtreſſed with a nervous head-ache and weak digeſtion. This diſorder runs in our family. I had tried almoſt every thing, but without relief. I muſt confeſs, however, that while I inhaled the vital air, it did me good, but the diſtance was ſo far to attend, that I was obliged to leave it off, it interfered ſo much with my buſineſs.— It ſeemed at the time to remove a load from my ſtomach, my ſpirits were better, and my appetite mended. It certainly took off a weight from my ſtomach, but whether the walk overpowered me I cannot ſay, but my head-ache continued the ſame. My diſorder had affected my ſight, that I could not ſee ſmall print, but after about ten days from my trying the air, having taken up a prayer-book, and turned by accident to where there was ſmall print, I was aſtoniſhed to find I could read it. Having ſoon left off the air, perhaps before I had given it a fair trial, my ſtomach is now as bad as ever, and my ſight as before.

I am, Sir,

Your obedient Servant,

ANN BENHAM.

To Dr. Beddoes.

Mrs. Benham regularly attended the firſt week each day, and for a fortnight after paid occaſional viſits.

R. I. T.

Letter

Letter from Mrs. BROOMHALL.

July 23, 1795, *Stanhope-ſtreet.*

SIR,

DECEMBER, 1793, when I came under Dr. Thornton's care I had a bad digeſtion, and a head-ache ſo intolerable, that I believed, had I not been cured, I muſt have loſt my ſenſes. I inhaled the vital air, and by Dr. Thornton's order, I took an electuary of bark and ſteel, three times a day, having been firſt prepared for that medicine. From the firſt I gradually grew better, acquiring both ſtrength and appetite, and in proportion as theſe improved, my head-aches were diminiſhed. I attribute my increaſe of ſpirits and appetite wholly to the vital air, for a lady in perfect health going one day with me, out of curioſity, to ſee me inhale the vital air, having deſired Dr. Thornton to allow her to take ſome of it, her ſpirits were ſo high, and her appetite ſo good, that ſhe very much ſurpriſed the family ſhe was with on her return home.

I am, Sir,

Your obedient humble Servant,

ELIZ. BROOMHALL.

To Dr. Beddoes.

The diſorder here mentioned, had been coming on gradually for three years. She has no returns of dyſpepſia or head-ache, and is at the preſent time in very good health.

R. I. T.

Letter

Letter from Mr. COTTEREL.

July 6, 1795, *King-ſtreet, Weſtminſter.*

SIR,

I WAS troubled with great flatulence, heartburn, want of reliſh to my food, lowneſs of ſpirits, coldneſs of the hands and feet, and had ſlept very ill for more than five years. Before this time I enjoyed very good health; and to be employed in my occupation for my wife and family was a delight, but now it was attended with extreme uneaſineſs to myſelf. I was under the care of Dr. Liſter, Dr. Pitcairne, and other medical Gentlemen of the firſt eminence. I had taken a great load of bark and other medicines, and during theſe five years I changed firſt from one and then to another, and tried what different friends recommended, but in the end I only grew worſe. Having ſpoke to Dr. Thornton, he gave me ſome hopes, and by his direction I inhaled the vital air, and drank three times a day water impregnated with fixed air, in which I dropt 30 drops of æther three times a day. In a fortnight I was free from my complaint, but I continued for ſome time the water impregnated with the fixed air, in which ſome ſalt of ſteel had been diſſolved, and I have ſince occaſionally chewed a warm aromatic root, and for theſe laſt two years have enjoyed very good health.

I am, Sir,

Your obedient Servant,

MATTHEW COTTEREL.

To Dr. Beddoes.

Observations

Observations on these Cases of Dyspepsia, by

Dr. THORNTON.

THAT common air consists of two principles, viz. vital air and azotic air, was first satisfactorily proved by Lavoisier: That the blood fixes within itself one of these principles, viz. the vital air, was perhaps the discovery of Dr. Goodwin. The extinction of this principle, before it enters the veins, thereby generating vital heat in the body, was the discovery of Dr. Crawford, to the perfection of which theory I might have slightly contributed: That there is a balance between the vital air taken into the lungs, and the quantity of food that can be digested by the stomach, was among your earliest discoveries. These cases seem to confirm your views, and unless there were danger of exhausting the patience of your readers, I could direct you to many other persons, from whom you might procure testimony to the same effect.

Note from Mr. RUSSEL, *Engraver.*

August 1, 1795, *Constitution-Row, Grey's-Inn Road.*

SIR,

THE Rev. Mr. Townsend's account of my case is perfectly correct and expressive of my situation.—— Wherever I went, every one who knew me testified the greatest surprise at seeing me so recovered. Since which time (nearly two years) I have continued in excellent health, having had no return of my former complaint.

I am, Sir, your most obedient humble Servant,

JOHN RUSSEL.

To Dr. Beddoes.

The

The case of Mr. Ruffel, together with some others treated by elastic fluids, is related by the Rev. Joseph Townsend in his *Guide to Health*. It was a case of *melancholia*. Oxygene air with other remedies were employed. The cure cannot therefore be fairly ascribed to oxygene alone; but the report shews demonstrably that this remedy had efficacy. For when it was withheld, the symptoms grew worse, and gave way when it was administered afresh. T. B.

Letter from Dr. THORNTON.

August 6, 1795.

DEAR SIR,

I CANNOT better close my communications than by the trial I have made of vital air in pregnancy. It had often been remarked, that pregnancy arrests consumption, but to you first we are indebted for an attempt to explain the manner in which this effect is produced. Allow me to lay your words before the reader. "The fœtus has its blood oxygenated by "the blood of the mother through the placenta.— "During pregnancy there seems to be no provision "for the reception of an unusual quantity of oxygene. "On the contrary, in consequence of the impeded "action of the diaphragm, less and less should be taken "into the lungs. The dark colour of the blood; the "aching of the teeth, and bleeding of the gums; the "propensity to break out into sores, their dark appearance, and difficulty in healing; the dislike to animal "food; and desire of acids and vegetables; also the

"black

" black appearance of the areolæ of the breaſts, pecu-
" liar to that period; and the ſallowneſs of the coun-
" tenance, ſeem to indicate a defect of oxygene." In the preſent caſe moſt of theſe ſymptoms were ſtrongly marked; they were accompanied with great dyſpepſia and lowneſs of ſpirits. As with thoſe under the influence of wine (the theory of which we before had occaſion to conſider), there was defect of appetite in the morning, with nauſea and frequent inclination to vomiting. Inſtead of arterial, (for the Lady was in the vigour of life) there was venous plethora, and ſhe complained of univerſal chillineſs. I obſerved that acid fruits and vinegar were ſo much indulged in, as in another ſtate of the frame muſt have produced great evil. This indulgence was not however previous, but ſubſequent to the ſymptoms above deſcribed, and ſo far from augmenting ſeemed greatly to leſſen them.— Any ſmell tending to putreſcency would occaſion a total derangement in her conſtitution. Salt of vinegar and acids were very reviving, and would almoſt inſtantly ſtay the inclination to vomiting. In this ſtate a violent fright produced firſt fainting, and then convulſive fits; theſe alternations would afterwards appear at uncertain intervals, and laſt from two to three hours. Wine, laudanum, peppermint, and brandy, ſeemed the moſt ſalutary remedies, either by being a ſtimulus adapted to the torpor of the ſyſtem at that period; or elſe from the conſent which this occaſions with the lungs, whereby a larger portion of vital air is imbibed by the blood flowing through that organ. As things were thus circumſtanced, I thought of the vital air, and reaſon authoriſed me to make this delicate and intereſting trial. Therefore during one of theſe paroxyſms,

peppermint-water and wine being firſt adminiſtered, and the room ſprinkled with vinegar, I preſſed into the lungs ſuper-oxygenated air, and in a few minutes there was a moſt evident alteration for the better. This Lady being recovered, the ſuper-oxygenated air was inhaled afterwards for ſeveral days, and it ſeemed to bring back the frame to the natural ſtate of health, but I choſe not to perſiſt in the uſe of an unknown power, unleſs urged by the ſtrongeſt indications.

I am, &c.

R. I. THORNTON.

To Dr. Beddoes.

Letter from Dr. THORNTON, *reſpecting patients with impaired organs of ſenſe.*

DEAR SIR,

FROM the very quick reſtoration to ſight of the blind boy, whoſe caſe I have before related, where there was water oppreſſing the brain, and from the caſe of Patterſon, it was generally rumoured abroad, that *gutta serena* yields to the powers of the vital air.—This report gained the more credit, as a lad, who had been deaf—ſo deaf, that he did not even hear the Tower guns, though placed under them when they were firing, and whoſe mouth was drawn awry—by inhaling the vital air had entirely recovered the right poſition of his mouth, and could diſtinguiſh loud ſounds, as the Rev. Mr. Townſend and many others witneſſed. It was pleaſing to obſerve, how delighted he was at the exerciſe of this returning faculty, for not a carriage

riage could paſs, nor a rap even at a neighbour's door, nor any loud noiſe, but he joyfully noticed it; on the firſt day of his hearing, his father ſaid, his extaſy was beyond expreſſion. He had likewiſe loſt the power of ſpeech, and therefore conveyed his meaning chiefly by geſture. The reſemblance which this caſe was ſuppoſed to bear to paralyſis of the optic nerve, made this idea general, even in the medical world. With regard to a partial paralyſis, we have in reality, one caſe ſomewhat in point.

A Lady of rank was recommended to me and Mr. Hill; ſhe had entirely loſt one eye, and the ſight of the other was ſo impaired, that ſhe could not read writing at all, nor any but the largeſt print; and ſtreams of light ſeemed to iſſue from the fire and the candles in the evening. There was no apparent defect in either of the eyes to any common obſerver, nor would any one in a room or carriage have imagined her ſight failed her in the leaſt. As the criterion to judge by, I requeſted this Lady, as ſhe paſſed by in her carriage, to try if ſhe could diſtinguiſh the hour at the Horſe-Guard's clock, ſhe found ſhe could not. She inhaled the vital air at firſt for a few days, and by the direction of Meſſrs. Wathen and Phipps, electricity was daily employed, and the vapour of æther was thrown with the electric aura on the eye. She took once a day a tonic mixture, and before ſix weeks were elapſed, this Lady was able readily to diſtinguiſh the hours on that ſame clock which had before preſented only a confuſed object.

A Merchant came purpoſely from Jamaica, to be under Dr. Baillie, who with that liberality and love

for

for the improvement of medical ſcience, ſo conſpicuous in the family of the Hunters, recommended him to Mr. Hill. I was in hopes I ſhould have been able to have furniſhed you with this caſe, and had long ago promiſed it; but from caprice ſo common among the ſick, without the leaſt ſhadow of ground, he deſiſted from the vital air, and gave up probably the only chance of recovery. A poor man labouring under total darkneſs from gutta ſerena, was humanely ſent laſt winter to Mr. Hill, by Meſſrs. Wathen and Phipps. His general health was eſtabliſhed by the inhalation of ſuper-oxygenated air. The pupils, I thought, ſeemed rather to contract upon the application of a ſtrong light, but the man living at a diſtance, and the winter being very ſevere, he did not attend much above a month.

With reſpect to ſuper-oxygenated air in true amauroſis no concluſion in my mind can be drawn from the caſe related by Dr. Carmichael; for the vital air was had recourſe to as a powerful exciting remedy; bleeding was on the ſame days employed, and a ſudden tranſition was made to an air diametrically oppoſite in its virtues. This accurate Phyſician purſued a very different mode in chloroſis with good effect at firſt, and I truſt, final ſucceſs. Upon the whole, "whether benefit will reſult from the vital air in true gutta ſerena" remains to be decided.

Ever your's,

R. I. THORNTON.

Letter from Dr. THORNTON, *on Yeast.*

DEAR SIR,

THE communication of the Rev. Mr. Cartwright, on the efficacy of yeaſt in putrid fevers, induced me to pay much attention to this remedy. It appeared to me an excellent ſubſtitute for the effervefcing mixture, which extricates too little fixed air to produce any very important action in the conſtitution. As fixed air forms the chief ingredient in medicinal waters, it has been without much oppoſition introduced into the practice of medicine. Its great antiſeptic powers have been fully aſcertained. But in the preſent inſtance I am about to conſider it alſo in another point of view. From the experiments of Dr. Percival, it appears, that fixed air is abſorbed by the lacteals, and is ſecreted from the blood by the kidneys, ſo as to affect the water in the bladder; hence it becomes a ſolvent for the ſtone. From thoſe of Mr. Abernethy, it appears, that it is alſo abſorbed by the ſkin, and you conjecture, "that the conſtitution might be ſaturated by the immerſion of the naked body or limbs in veſſels containing airs." Theſe ſuggeſtions led me to a new mode of treating peripneumony. But it may be proper firſt to premiſe one or two trials of yeaſt in putrid fever.

Mr. Caldwell, ſome months back requeſted me to go into Green-ſtreet, Leiceſter-fields, to attend Mr. Hadril, who he ſaid, it was ſuppoſed, would not outlive the day. I found him labouring under a dreadful ſore throat: the tongue was black and thick coated, and the pulſe quick and fluttering. Evacuations being firſt employed,

employed, yeaſt and bark in porter were exhibited every two hours. His ſiſter, who nurſed him, was ſoon after attacked by the ſame fever, but the throat was not affected. She was not like her brother confined to her bed, but her weakneſs was ſo great that ſhe could not walk acroſs the room, nor even ſtand up half a minute without ſupport. In both theſe caſes the relief from the yeaſt was very ſtriking, and they were ſoon cured.

Mrs. Knight of Bolt-court, Fleet-ſtreet, had a white tongue ; proſtration of ſtrength ; the eyes gloſſy ; the countenance vacant, with a hecking cough ; great heat on the ſurface ; pulſe 120 ; complexion very florid. Having firſt given an emetic and cathartic, and well cleared the primæ vitæ, I ordered three table ſpoonfuls of yeaſt to be taken every two hours. After the ſecond repetition of this remedy, it brought on a great ſenſe of coldneſs ; the ſtomach was inflated with wind ; ſhe eructated continually ; and for two hours was threatened with hyſteria. As the loſs of the fever produced great faintneſs, her officious and alarmed friends, gave her their grand ſpecific for wind and lowneſs, Geneva and water. Finding on the next the day fever returned, and a prejudice againſt the yeaſt, I treated it according to the ordinary practice ; the inflammatory ſtage paſſed into the putrid, with twitching of the tendons, and other ſymptoms exciting alarm, and notwithſtanding bark and wine it run its courſe of one and twenty days.

Maſter Kennard, who lives with Mr. Stoner, Charles-ſtreet, was brought to me by his mother for my advice. He was alſo in the inflammatory ſtage of a putrid fever.

I ordered

I ordered an emetic of antimony, and after this operation cleared the inteſtinal canal with rhubarb and vitriolated kali; the fever, though greatly abated, ſtill continuing, I recommended yeaſt, and the lad was in a few days perfectly recovered.

Having in the two laſt caſes aſcertained, that the ſthenic pulſe was ſunk by the operation of the fixed air, extricated in the warm ſtomach from the yeaſt, I conceived, that in violent inflammation it might ſometimes preclude the free uſe of the lancet, and a caſe happily occurred, at the cloſe of laſt winter, which ſeemed to authorize the trial.

Mr. Kennedy, a hair-dreſſer by trade, living in Tottenham-Court-Road, aged 35, of ſo nervous a frame that he could not ſhave his cuſtomers, (his hand being ſubject to tremble) was attacked with the prevailing inflammatory diſeaſe of the laſt ſpring, which took off ſuch a number of perſons. He was ſeized with rigor and head-ache, ſucceeded by acute pains in the cheſt; his breathing became laborious, and towards night he had violent delirium. I was ſent for early in the morning, and I obſerved 1ſt. a tenſe and oppreſſed pulſe; 2d. great heat; 3d. great difficulty of breathing; 4th. he complained of acute pain in the right ſide; and 5th. had total loſs of ſleep. I inſtantly called to mind Brown's ideas on catarrh. After a ſevere froſt, with ſnow on the ground, the weather became mild, and the *accumulated irritability* was by the heat called into action — Had blood been taken from the arm, the blood partaking of the ſame *increaſed irritability* would have contracted ſtrongly, and we ſhould have had that cupped appearance, and hard coagulum ſo expreſſive of inflammation.

From

From this theory the art of cure seemed to be to adjust the stimuli to the tone of the irritable fibre, and as the ordinary stimuli produced inordinate action, from the increased irritability of the fibre, it became necessary to reduce these as early as possible. I was convinced, from former experience, that the oppressed pulse would have risen under the finger, as the stimulus of the blood was withdrawn; but as this fluid is with difficulty regenerated in habits like that of my patient, and in *this* epidemic bleeding had precluded quick recovery, I resolved to omit for the present the abstraction of this stimulus. But I ordered the fire to be put out; I removed the stimulus of light; I would allow no one to sit in his room, or speak to him: to take off the stimulus of food from the stomach I gave him an emetic of tartarized antimony; and to take away all stimulus from the intestinal canal, I ordered a cathartic of rhubarb quickened by vitriolated kali. During the operation of these, I applied a very large blister to the chest, the stimulus of which I conceived would do no harm under the operation of the cathartic, and might do good by deriving from the lungs, and afterwards by drawing off the serum of blood, which is a species of half bleeding. To supply oxygene without caloric, I ordered from six to ten lemons in the twenty-four hours, in tamarind drink. Not contented with this, I wished the famished system to absorb as much fixed air as possible, (whose sedative power on the heart and arteries is sufficiently proved) and he took therefore yeast in his acidulated water, and he was ordered frequently to plunge his arm in this fermenting ingredient. I ordered two grains of calomel to be taken at bedtime, the acid drink to be frequently repeated with the yeast,

and

and I encouraged no hopes in my patient, and in the morning he was to take the cathartic before-mentioned, to which was added half a grain of tartarized antimony.

The next day I found the pulſe of my patient leſs oppreſſed conſiderably. I aſked him to attempt an inſpiration but he could not bear it. The want of ſleep was now eaſily accounted for. The lungs being in part a voluntary organ, as diſtention of the veſicles was acute agony, the mind was kept conſtantly alert in preventing a too free reſpiration, hence perhaps the reaſon why the breathing was alſo quick and laborious.

He had no return of delirium. I repeated the purges on the two following days. The pulſe became ſofter; the tongue looked leſs white; the thirſt was abated; the breathing relieved; he ſweated profuſely; and began now to covet ſome food. I now admitted the ſtimulus of light; I raiſed his hopes; and progreſſively adding different ſtimuli, I came to bark; and in leſs than three weeks he was about on his buſineſs and as well as ever.

Nearly about the ſame time I was called in to attend Mrs. Eaton, at Shepherd's Market. Her diſorder ſeemed leſs confined to the pleura, and extended more over the mucous membrane of the lungs. Her pulſe was 112, tenſe, full, and intermittent; her reſpiration extremely laborious; her cough very painful; and her expectoration great. The blood taken from the arm exhibited a cupped appearannce, and hard coagulum, and the buffed coat, which is perhaps a ſecretion from the arteries. She was attended by Dr. Reynolds, who wrote to me as follows:

 SIR,

SIR,

I SHALL be very happy in Mrs. Eaton's having your aſſiſtance, and I ſincerely hope that her inhaling a reduced atmoſphere will be of uſe to her. Her reſpiration is at this moment very laborious, if that can be relieved, I truſt that ſhe will do well.

Believe me with the higheſt eſteem and regard,

Dear Sir, your faithful Friend and Servant,

H. R. REYNOLDS.

Wedneſday, Jan. 21,
5 o'clock.

To Dr. Thornton.

I STAYED four hours with Mrs. Eaton, while I obſerved the effects of yeaſt in her caſe, during which time I gave her near half a pint. Her hands and arms were immerſed in this liquid in a ſtate of ferment, and it lowered the pulſe to 94, and produced ſo much coldneſs, languor and dyſpepſia, that for fear of her ſwooning, the window was obliged to be thrown up to let in the freſh air. The irritation on her lungs, ſhe ſaid, was leſs, and what ſhe expectorated was eaſy. She was bled in the evening, but no ſuch alteration of the pulſe, or languor was produced from bleeding, as from yeaſt.—After this operation, for two nights ſhe inhaled a reduced atmoſphere, but it occaſioned catchings of the breath, and augmented the pain. Only a ſmall quantity being inhaled at each time, from a general law in the animal œconomy, (now beginning to be underſtood) inſtead

inſtead of leſſening, it *quickened** the pulſe as Dr. Reynolds obſerved, at the time. As no material benefit was derived from this weak eſſay, it was omitted, nor have I ſince tried it. But I have purſued the other mode in two inſtances with the moſt pleaſing ſucceſs, not that I would recommend this plan in every caſe, but only with ſuch patients as are of a weak habit, and who therefore are ſooner affected by the abſtraction of ſtimuli. Might it not be conjoined with bleeding; and I muſt obſerve in the caſe of Mrs. Eaton, ſome Gentlemen of the faculty, who had previouſly ſeen her and given her up as loſt, are of this opinion, but trials in a Pneumatic Inſtitution would determine this.

From, my dear Sir,

Your ever faithful Friend,

R. I. THORNTON.

Letter from Dr. THORNTON, *containing general obſervations on his experience with airs.*

No. 3, Bennet-ſtreet, St. James's, Auguſt 2, 1795.

DEAR SIR,

IN almoſt all of the caſes in which I have adminiſtered elaſtic fluids, Mr. Hill, whom I have had occaſion to

* I imagine there are few circumſtances (I never ſaw any) in which a lowered atmoſphere does not at the moment *quicken* the pulſe, while it weakens the action of the heart and arteries. T. B.

to mention as a Surgeon, and who alſo practices Pharmacy, attended in the latter capacity, and becomes therefore an additional teſtimony to the efficacy of the vital air. A queſtion will here naturally occur.——" *Have not the cases which I have related, or pointed out* " *for your inquiry, been ſelected from innumerable* " *others?*" I could on the contrary add conſiderably to the liſt of perſons cured: but confining myſelf to thoſe diſorders, which ſcientific medical men generally allow to be incurable, or at any rate very difficult to cure, I here ſolemnly declare, that of ſuch caſes I have recorded every inſtance, excepting thoſe of aſthma and vitiated ulcers of the leg, where the trials have been very numerous, and almoſt univerſally crowned with the moſt ſtriking ſucceſs. Out of the many trials in which the ſuper-oxygenated air has been at all employed, four only have terminated in death. Your readers ſhall be enabled to judge whether the ſmalleſt ſuſpicion can fall on the oxygen in any of thoſe caſes. One of them I have before related, where there was water on the brain, the ſecond was a Gentleman from America, whom when I firſt ſaw, I did not believe that he could ſurvive many days. He had, I ſuſpect, great adheſions, tying up the organ of reſpiration, and never took an eaſy breath, but while he was inhaling the ſuper-oxygenated air. He obtained a reſpite and relief for above two months; when complaining of coach-hire and former misfortunes, he very reluctantly gave up attendance, though the air was offered him free from expence. From almoſt that moment he lamented to his wife that he had loſt his *only support*, and ſoon after reſigned his ſpirit to that Being from whom it is derived. The third was a Gentleman who had a paralyſis of the lower

lower extremities from a diseased spine. Mr. Cruikshanks, had employed caustics, and other remedies, but without success. When he came under Mr. Hill's care, he could not retain the natural evacuations, and as this last symptom gave me reason to expect, he did not survive to inhale the super-oxygenated air above a dozen times. The fourth was a sister of that experienced Surgeon, Mr. Sharp, in a case of cancer, where I was called in with Mr. Hill, to try the application of fixed air to the breast, and vital air internally; this plan gave some ease, but from the extent of the disease, and severity of the frost our apparatusses were destroyed, which were of glass, and we made therefore here a very imperfect trial.

The vital air, which I have generally employed has been formed from manganese and oil of vitriol, which went through a very careful and tedious process, before it was fit for use. The cautions employed I need not detail, since by Mr. Watt's admirable *Pneumatic Apparatus* the vital air may be obtained pure, and with equal ease, and probably with the same, if not superior qualities.

I am, dear Sir,

Ever sincerely your's,

R. I. THORNTON.

To Dr. Beddoes.

Letter from Mr. WATHEN PHIPPS, *Surgeon.*

Pall Mall, Thursday, Aug. 5, 1795.

SIR,

UNDERSTANDING that you are collecting accounts of the various effects either seen or felt from the vital air, I embrace the present opportunity of transmitting the result of two cases to you. I was first induced to recommend the oxygen air, from observing the very happy and immediate effect it had in removing violent spasms, which had resisted in a relation of mine, all medicines for above six months.* Soon after this a very corpulent Lady, of about 60 years of age, applied to me for a chronic inflammation in her eyes: besides which, I found she laboured under the greatest possible difficulty in breathing. She could not even walk from the coach into the house, without stopping more than once to recover her breath. After ordering what appeared to me necessary for her opthalmia, I recommended her to the care of Dr. Thornton for her dyspnœa, requesting to see her in a week. In this short space of time the amendment exceeded my expectations.— She had walked the greater part of the way from Bloomsbury, to my house; her respiration had become almost free; and her nights better than she had enjoyed for a long time. She continued the use of the oxygene air for a month, and was most perfectly cured, and has never had any relapse. Another remarkable instance of the effect of the oxygene air on the blood, came under my observation last summer, which I cannot forbear

* Of this case there is a short notice in my *collection of letters.* T. B.

bear mentioning. Miſs F——,* a young Lady from Scotland, was afflicted with a chronic inflammation of the eyes, which had continued ſome months before ſhe came to England. The tranſparent cornea had become opaque, and the eyes otherwiſe much injured. She was extremely emaciated and ſo debilitated, that it was with difficulty ſhe walked acroſs the room. A violent and conſtant pain affected the head, which was relieved only by ſleep; which ſleep was ſeldom procured, but from the exhibition of 112 to 120 drops of laudanum, the effect of which was no ſooner gone than the pain returned. Every poſſible means had been uſed without benefit, when the oxygene air was recommended: after breathing it about ten days her appetite began to return, ſhe was enabled to take an airing in the carriage, and ſhe had ſeveral good nights, with a much leſs proportion of laudanum. I had frequently been in the habit of ſcarifying the inſide of the lower eyelids, from which ſhe always found temporary relief. Prior to the exhibition of the vital air, the blood poſſeſſed ſo few red particles, that it ſcarce tinged the handkerchief, and appeared more like the ſtain from yellow ſerum than from blood. After ſhe had taken the air for ſome days, it gradually aſſumed a redder colour, and at laſt regained its proper red appearance; a ſtrong proof this, of the power of oxygene to change the nature of the blood.

With the ſincereſt wiſh for the ſucceſs of your laudable and humane deſigns,

I remain, Sir, your very humble Servant,

WATHEN PHIPPS.

To Dr. Beddoes.

Letter

* This caſe the reader will recollect to have ſeen mentioned by Dr. Thornton alſo. T. B.

Letter from Mifs STEPHENS.

Auguft 6, 1795. *Snow-Hill.*

SIR,

A YOUNG LADY, an acquaintance of mine, aged 20, having been two years ill, and under Dr. Carr, an eminent Phyfician, at Northampton, but continuing in the fame ftate, fhe was fent on a vifit to me, in order that fhe might obtain the opinion of fome Phyfician in London. Having had the pleafure to fee the greateft benefit derived by a young Lady,* whofe cafe was fomewhat fimilar, from the inhalation of the vital air, I was very anxious for her to make trial of the fame means. The countenance of Mifs S—— was pale in the extreme; her lips very white; her breathing fhort; fhe was incapable of the fmalleft exercife; fo wearied was fhe in dreffing herfelf, that even during this trifling exertion, fhe was obliged repeatedly to lie down; her appetite was very indifferent; her fpirits low; fhe conftantly complained of cold; and towards evening her legs ufed to fwell. When we firft went to Dr. Thornton's we were obliged to take a coach there and back, and even the getting out and in, and going up ftairs feemed too much for her. At the end of five days, the change in her ftrength was fo great, that fhe was able to walk back from Great Ruffel-ftreet, and in getting up ftairs, inftead of panting for breath at every four or five fteps, fhe could afcend the whole flight with the greateft fpeed and eafe. Her appetite was good; her fpirits raifed; her countenance fhewed the figns of returning health; and

* This young Lady's cafe has never been mentioned in print. I underftand the cure was complete and permanent. With others of the fame kind it leaves little doubt of the powers of oxygene in thefe affections. T. B.

and her lips, cheeks, and nails aſſumed a faint bluſh, which continued increaſing, until ſhe was in *every particular* reſtored to perfect health, and could walk to and back from Great Ruſſel-ſtreet, above three miles, with the utmoſt eaſe. When Miſs S——, after ſtaying with me five weeks returned to her friends, every one was aſtoniſhed at the great alteration, and indeed ſhe hardly appeared the ſame young woman.

I am, Sir,
Your obedient humble Servant,
CAROLINE STEPHENS.

To Dr. Beddoes.

Observations on this Case by Dr. THORNTON.

1. Did not the pallid countenance; the white lip and tongue; the dyſpnœa when in action; the ſemi-pellucid and poliſhed ſkin; the want of perſpiration; the black and pearly eye; the coldneſs of the frame; the dyſpepſia; the yellow appearance of the teeth; the lowneſs of ſpirits; the weak and quick pulſe; denote a deficiency of oxygene in the ſyſtem.

2. If the ſkin was torn (before the ſyſtem was oxygenated) there would ooze from the ſcratch, not blood, but a yellow ſerum. Is not the predominance of this fluid, the cauſe of that ſallowneſs of the countenance ſo frequently miſtaken for a diſeaſe of the liver, whence theſe perſons have the name of *bilious?*

3. As this young lady had been under ſuch excellent hands, may we not conclude the ſteel and aloetic cathartics inadequate to the alteration here produced? In other inſtances the vital air along with theſe, has ſucceeded, when either *alone* did not produce the deſired effect.

4. In ſeveral inſtances, when the blood has been oxygenated, and the ſyſtem ſtrengthened, I have employed *electricity* with the ſpeedieſt effect. In ſuch caſes I have not had occaſion for aloes or ſteel to remove the *emansio mensium.*

Letter from Mr. BARR.

Birmingham, 20*th Aug.* 1795.

DEAR SIR,

REBECCA STANLEY, ſervant to Mr. Watt, of Heathfield, about 35 years of age, of a ſlender habit of body and a narrow cheſt, was ſeized with the epidemic cold or influenza of laſt ſpring, and has ever ſince been afflicted with a tight dry cough, a pain of her ſide, and occaſional fits of difficult breathing. She would not conſent to have any medical advice, and had taken no medicines. A few days previous to my being conſulted, ſhe caught cold, which much aggravated all her complaints. The cough became almoſt perpetual, and on the 28th of July, the breathing became oppreſſed in a degree truly alarming. She could not bear a horizontal poſition, but was obliged to be ſupported upright in bed through the night.

Mr. Watt gave her an emetic early in the evening, which operated well, but produced no relief; ether and other antiſpaſmodics were given, and a large bliſter was applied to the breaſt, where a ſenſe of exceſſive tightneſs and conſtriction was felt, but yielded no benefit. She paſſed a very bad night, and I was ſent for early in the morning.

I found

I found her ſkin hot and dry; her pulſe beat between 90 and 100 ſtrokes in a minute, and her breathing was very laborious. I gave her thirty drops of laudanum with a dram of ether in half a tea cupful of water. Her breathing was much relieved by it, and continued ſo during the day. I adviſed her to inhale a pint of hydro-carbonate in twenty quarts of common air, in the evening, and repeat the doſe, increaſed or diminiſhed according to its ſenſible effects, morning and evening; I likewiſe directed the laudanum to be repeated if urgent ſymptoms ſhould return; the dyſpnœa was ſtill further relieved by the inſpiration of the air, and ſhe paſſed a tolerable night; no more laudanum was given. Next morning ſhe had a pint and half of hydro-carbonate diluted as before. The breathing became very eaſy; at night ſhe had the ſame quantity, and ſlept better. Next day the ſenſe of tightneſs and conſtriction in breathing was nearly gone, but the cough continued troubleſome. The pulſe, was hard, ſmall, and quick, the tongue was white, and the pain of the ſide was not removed. I took ſix ounces of blood, which was much inflamed, from her arm, and gave her a quart of hydro-carbonate, which quantity I directed to be inſpired night and morning. I alſo adviſed three grains of James's powder to be taken every eight hours.

I ſaw her again on the ſecond of Auguſt. All the ſymptoms were much mitigated. The pulſe was reduced to 80, her nights were much better, but the cough was but little abated. The James's powder was directed to be continued a day longer, and the hydro-carbonate for a week; at the end of the week ſhe was in every reſpect well, except a little cough. I adviſed the continuation of the hydro-carbonate till the cough

was

was entirely removed. This I found to be the caſe when I ſaw her three days ago—ſhe ſleeps well, and her pulſe is full and regular.

In the beginning of this caſe the extreme urgency of the ſymptoms induced me to uſe active remedies along with the hydro-carbonate, and it certainly did not impede their ſalutary operation. In the latter ſtage it had no aſſiſtance. Could demulcents, expectorants, or antiſpaſmodics, either ſingly or conjoined, have done more? Could they have done as much?

I remain, dear Sir,

Your's, &c.

JOHN BARR.

To Dr. Beddoes.

Letter from Dr. DARWIN *to* Dr. BEDDOES.

Derby, Aug. 12, 1795.

DEAR DOCTOR,

IN recording the efficacy of new medicines, caſes in which they do not ſucceed are uſeful as well as thoſe in which they do.

Mr. W——, about 60 years of age, was afflicted with hydrothorax, which had been gradually increaſing for about two years; he had been ſix or ſeven times relieved by taking tincture of fox-glove. He breathed about eight gallons of oxygene gas, from Exeter manganeſe, every day for about a week; it was at firſt diluted with about equal parts of atmoſpheric air, but he took it after a day or two undiluted, unleſs by the ſmall quantity

quantity of air which might be in the hydraulic bellows previous to the introduction of the oxygene.—He did not perceive either any temporary or permanent effect from it. After about a fortnight he was again relieved by the tincture of fox-glove, and again began to refpire oxygene, which was undiluted, and took about fix or feven gallons every day for about a fortnight, without any apparent effect, except that at laft one parcel of air difagreed with him, which was probably owing to fome inflammable material, which had incautioufly been mixed with the Exeter manganefe in putting it into the tube. In a few weeks afterwards he funk under the difeafe.

Mrs. S——, a young married lady, with light eyes and hair, had been long confined by a pertinacious head-ache; and was fo far reduced, as not to be able to rife from her bed, fhe breathed about fix gallons of oxygene gas daily, for three or four weeks, which was at firft diluted with equal parts of common air, afterwards fhe chofe to take it undiluted. She always found herfelf revived by thefe inhalations, and gradually recovered her health, and became ftronger than fhe had been for fome years, and freer from the pains of her head. Though thefe pains of her head probably originated from decaying teeth; yet, as other people experience a decay of their teeth, without violent and permanent hemicrania, there muft be fome other caufe; which may confift in the too great fenfibility of the fyftem to this affociation of the morbid action of the membranes of the teeth, or of the alveolar proceffes with thofe about the temple. This fenfibility feems to have leffened as the conftitution became invigorated.

I have

I have only to add, that it is probable, that the quantities of oxygene gas would have had greater effects, if it had been respired in a more dilute state. And that I suppose the inirritability of the lungs to the stimulus of oxygene gas in the former case, might be owing to their being in some degree anasarcous, like the limbs.

From, Sir,

Your's most sincerely,

E. DARWIN.

Letter from DR. PEARSON.

Birmingham, Aug. 23, 1795.

DEAR SIR,

WHEN I sent you an account of the effects of oxygene air in the case of the chlorotic girl, Mary Rider, I mentioned that I had also prescribed the same remedy to another patient affected with epilepsy, joined with amenorrhœa. This patient, whose name is Ann Smith, is about 18 years old; she has been subject to epileptic fits for more than two years. When at the worst she had four or five fits in the day-time, and one or two in the night. At the time the fits first came on, the menses, which had been regular before, ceased, and have never returned since. Several years ago she was troubled with worms; but it does not appear she has them now. These particulars relative to the history of her case, have been collected from her mother, as the patient is incapable of giving an accurate account of herself, her understanding and memory being so much impaired as to amount to some degree of idiotism.

It was in January laſt, that ſhe firſt breathed oxygene air, the application of which, after two or three doſes, was then interrupted by the accident mentioned in my former letter. About half a year afterwards, viz. on the 4th of July, this remedy was repeated; ſhe breathed 226 cubic inches of oxygene air largely diluted with common air. This application was continued till the 22d of the ſame month, (i. e. nearly three weeks), towards the end of which time, the doſe of the factitious air was increaſed to as much as 678 cubic inches. The inhalation was now diſcontinued, as it did not appear to be of any ſervice. Scarce any difference was perceivable after the inſpirations, except that the pulſe was fuller and quicker, and the countenance more coloured. But theſe effects muſt be owing (at leaſt in part) to the efforts of the patient in drawing in the air from the bag, and to a greater expanſion of the lungs (in conſequence of fuller inſpirations) than happens in ordinary breathing. It is noted in the minutes of her caſe, that on the 20th of July, ſhe ſaid, ſhe had not had ſo many fits as uſual; but I am unwilling to give credit to her own words, and the more ſo, as about a fortnight afterwards, upon inquiry of her mother how ſhe went on, I was told ſhe was not at all better.

This ſhort ſtatement is extracted from the journal kept at our hoſpital. To go more into the detail of a caſe which is indeciſive either one way or the other, I thought would be uſeleſs. In the inſtance of epilepſy of which you have given an account in one of your publications, the ſymptoms were aggravated by oxygene air. In the preſent caſe, if it did no good, it did no harm. Whether in leſs complicated caſes of this diſ-

eaſe

eaſe it is capable of giving relief, is a queſtion which remains to be determined by future experience.

It is noted in the minutes of the hoſpital-journal that the patient ſometimes appeared more lively after inhaling the factitious air; and one day ſhe complained of a pain in her ſtomach. This circumſtance ſhows that her feelings were rendered more acute by the uſe of this remedy. May we not then infer, that oxygene air would be ſerviceable in caſes of amentia or fatuity?

In this epileptic patient, I ſuſpect ſome organic affection of the brain; which explains why the oxygene air, though adminiſtered in ſuch large doſes, produced ſuch little effect.

I am, Sir,

Your's truly,

To Dr. Beddoes. R. PEARSON.

P. S. So much has lately been ſaid in favour of *yeast*, as a remedy in typhus and other diſorders, that I have been induced to take ſome notice of it. Thoſe who have written about it, do not ſeem to have underſtood its nature thoroughly. They have looked only to the carbonic acid which it contains, without being aware of another active ingredient in its compoſition; I mean the *bitter principle of the hop*, which is preſent in a very concentrated ſtate in yeaſt, and is highly narcotic. It is to this principle that I aſcribe the violent effects which I have known yeaſt to produce when given internally. I have been witneſs to its operation in two caſes. Neither of them were fevers. In the firſt, the vomitings,

vomitings (which had come on before) were increafed by it; and in the other inftance it purged violently. In refpect to its ufe *internally*, I cannot help looking upon it as a very doubtful remedy; but I can bear teftimony to its good effects *externally*, in cutaneous affections. It fhould be obferved that there is a great difference between *old* and *new* yeaft. By keeping, much of the carbonic acid air efcapes, the mafs becomes lefs frothy, and its parts are brought into clofer contact: hence old yeaft, is bulk for bulk, much ftronger than the new. I fufpect, too, that in proportion as it lofes its carbonic acid air, it becomes more powerfully narcotic. It is therefore a neceffary precaution to proportion the dofe according to the quality of the yeaft. The old is at leaft twice as ftrong as the new.

THE reader will recollect the interesting case of I. T. *so minutely detailed by* Dr. Carmichael, (Confid. 2d. ed. p. 87.) *He had in Nov.* 1794, *an almost incessant cough, with copious expectoration, sense of tightness across the chest, much dyspnœa on the slightest exertion, pulse* 110—120—*nights restless, attended with profuse perspirations, and much emaciation. After a course of hydro-carbonate air, without medicines, he was strong enough by the end of February,* 1795, *to determine to return to his usual occupation. The following letter tells the event.*

T. B.

Letter from Dr. CARMICHAEL.

DEAR SIR,

I NOW communicate to you the ſequel of I. T.'s caſe. On the 1ſt of March 1795, (the date of the laſt report) he was continuing to gain ſtrength, his cough was leſs frequent, the quantity of matter which he expectorated was ſmall, his appetite was good, and he ſlept well. He found himſelf ſo well in every reſpect that he became anxious to return to his employment, and as I could not prevail upon him to deſiſt from his intention, I adviſed him firſt to inure himſelf gradually to the cold, by walking out a little daily. He complied with my advice, and continued to gain ground till the 9th of that month, when in the evening he was ſeized with the uſual ſymptoms of the influenza, an epidemic catarrhal infection, which at that time prevailed much in this place. The febrile ſymptoms ran high, and were attended by frequent cough and conſiderable pain in his ſide; he complained alſo of ſevere head-ache and unuſual languor, he was thirſty, his tongue was white, his pulſe 110.

15. Febrile ſymptoms continue; cough frequent but now attended with increaſed expectoration; pain of his ſide leſs ſevere; conſiderable dyſpnœa on the ſlighteſt motion; pulſe 115, ſmall and weak. Until this attack he inhaled twice daily a gallon of hydrocarbonate, diluted with four times the quantity of atmoſpheric air, but as his ſtrength waſted, it was found neceſſary to leſſen the quantity to one quart diluted as above.

20. Pain of his ſide ſomething eaſier, but his cough increaſed in frequency and his expectoration is more

copious

copious. Reſtleſs nights; no appetite; ſtrength ſo much impaired, that for the laſt four days he has not been able to inhale the modified air; pulſe 120. I directed a warm ſtimulating plaiſter to be applied to his ſide, and five drops of tinctura opii to be given every four hours.

28. Pain of his ſide gone, but his other ſymptoms continue; bowels regular; has had better nights, but his ſleep has been attended with profuſe perſpirations; the tinctura opii was omitted, and he was directed to take at nearly the ſame intervals a ſmall glaſs full of port wine.

15th April. Complaints continue without material alteration. From this date he recommenced the uſe of the hydro-carbonate, beginning with it of the ſtrength of one pint to ſixteen quarts of common air.

25. At firſt the modified air occaſioned conſiderable vertigo, but he ſoon became ſo much habituated to its operation, that the quantity was increaſed to one, and afterwards to two quarts. His perſpirations have abated, his cough has been leſs urgent, the quantity of his expectoration has diminiſhed, and the dyſpnœa, with which he has for ſome time paſt been troubled on the ſlighteſt motion, is greatly alleviated.

3d May. Since laſt report he has experienced conſiderable amendment, pulſe 98. The quantity of hydro-carbonate was further increaſed to a gallon diluted with four times that quantity of atmoſpheric air.

15. He has continued to recover ſo much in every reſpect, that yeſterday he walked, not without difficulty, fourteen miles into the country.

From

From this time I did not ſee him till the middle of June, when he returned to this place with an intention to follow his uſual occupation. He was in every particular ſo much better, that he ſeemed to have recovered completely the ground he had loſt. I adviſed him to the country, to which he conſented, and he has ſince been occupied in hay-making, and more lately in reaping. I ſaw him a few days ago; he cannot be ſaid either to cough or expectorate, except of a morning, and then in the moſt trifling degree, and his ſtrength is ſo completely reſtored that he has been earning wages equal to thoſe of the ſtouteſt of his fellow-labourers, with eaſe to himſelf and ſatisfaction to his employer.

I am, dear Sir,

Your's ſincerely,

JOHN CARMICHAEL.

Birmingham, 25 *Aug*. 1795.

To Dr. Beddoes.

My aſthmatic patient I. B. continues perfectly well. I cannot ſay ſo much for the chlorotic girl. By the uſe of oxygene her health has been amended four ſeveral times, but the menſtrual evacuation has never yet taken place. I. C.

Letter from Mr. ROLPH, *Surgeon.*

Thornbury, Aug. 7, 1795.

DEAR SIR,

IT is with peculiar ſatisfaction I inform you my oxygenated patient continues improving in health, and from preſent appearances, there is little doubt of his

perfect

perfect recovery. I here send you his state of health, previous to his commencing a course of oxygene air, and his daily report since.

W. Trayhern, aged 35, by trade a tailor, had about the middle of June, 1793, a slight discharge from the urethra, for which he took some pills prescribed by a medical gentleman at Bristol; in the course of seven or eight days after he complained of a violent pain in his foot, which also appeared tumefied. By the advice of an old woman he bathed it with palm oil and rum, by which means the swelling was in a few days reduced, and the pain mitigated. He remained tolerably well for three weeks or a month, at which time he experienced violent pains in the hips, which confined him to bed for three months; his arms also at the elbow and shoulder joints became much affected, and remained so nearly the same space of time. After this he felt himself better, but a constant sense of coldness remained, together with lameness and pain, especially about the hips. In the latter end of Dec. 1794, the sense of coldness increased, and in a few days after his joints were more violently affected. At this time it was recommended that he should use mercury, in order to excite salivation; from an idea, that his complaints originated in the discharge he experienced in June, 1793. Being assured this would shortly restore him to health, he followed the advice. A short time after salivation commenced, there was a violent hæmorrhage from the gums, he says nearly two quarts. But so far from experiencing the promised relief from this expedient, his pains and difficulty of motion were much increased. He had no power over the muscles of the left

left leg and thigh; ſo that whenever he attempted to walk with the aſſiſtance of a ſtrong ſtick in each hand, he was obliged to exert the muſcles of the abdomen and pelvis in a very peculiar way. Indeed the muſcular activity was ſo generally impaired that he could not turn in bed without ſomewhat to hold, and even then the exertion was moſt painful. He had been unable to turn in bed for a year and half; and for eight months unable to ſtoop. His nights he paſſed in pain, and generally was a ſtranger to ſleep. Though his appetite was good, his body was greatly emaciated, and during unſettled weather he felt intolerable pains. When he ventured out he was truly a ſpectacle that could not fail to excite the attention and commiſeration of every one he met. In this deplorable ſtate he was pointed out to me, on Saturday July 4, 1795, by a gentleman in the neighbourhood, of great humanity and obſervation: on Sunday the 5th, I had a converſation with him and learnt the above particulars.

As there did not appear to be any organic affection, I determined to try the effect of oxygen, which from the general ſtate of the muſcular ſyſtem ſeemed to promiſe relief. Being not then provided with any air, I begun on Monday the 6th, with giving him pills compoſed of bark and ſteel, and an opiate at night: Tueſday felt as uſual; Wedneſday he inhaled three quarts of oxygene gas, mixed with ſo much common air as to fill the bag; the medicines were continued; Thurſday he had a good night, in other reſpects he felt as before; Friday he had a good night, and to uſe his own expreſſion, felt himſelf lightſomer; Saturday he thonght he moved with greater eaſe and leſs fatigue; Sunday he

he was better, and able to turn himſelf in bed; Monday muſcular motion performed with greater eaſe, and he was able to ſtoop to pick up any thing from off the ground; which he had not been able to do, as I before obſerved, for eight months; Tueſday he paſſed a good night, and felt himſelf warmer than before: in the morning came down ſtairs, and walked to my houſe, the diſtance of 100 yards, with the aſſiſtance of one ſtick only; Wedneſday in a mending ſtate, he felt ſuch a genial warmth all over him as he had not experienced ſince 1793. Thurſday as the day before; Friday he felt himſelf ſtronger and a greater glow through the whole frame. Saturday he walked a ſhort diſtance on plain ground without a ſtick; Sunday, Monday, and Tueſday in the ſame ſtate; Wedneſday notwithſtanding change of weather, he did not feel thoſe pains he had been accuſtomed to. Thurſday he was able to bend the left knee in walking; Friday complained of great pain in the heel and a little in the knee; his medicines were diſcontinued and a quart of oxygen added; Saturday as the day before; Sunday the heel and knee were relieved, paſſed the night free from pain, but without ſleep. Monday he had a reſtleſs night but free from pain, is able to walk ſeveral hundred yards upon plain ground without a ſtick; Tueſday he had a reſtleſs night, but in no pain, walked with the aſſiſtance of one ſtick nearly a mile; Wedneſday had little or no ſleep, but free from every uneaſy ſenſation. He ſat at work croſs-legged the whole day, which he had not been able to do for two years and better.— The anodyne pill was again taken. Thurſday he ſlept well; Friday he complained of ſlight pain in his hips; Saturday he was better. He began inhaling the factitious

titious air twice a day, omitted the opium and ſlept well. Sunday, though the weather was very ſtormy, and ſuch as greatly affected him before the uſe of oxygen, yet he found himſelf quite free from pain.—Slept well without opium. Monday free from pain, continues mending; his countenance evidently altered for the better, and he regains fleſh. Tueſday went to Briſtol in a cart, and there to continue a few days. Slept well without opium.

In regard to your little patient, I have the ſatisfaction to ſay he is *much* better, from the uſe of yeaſt and carbon. I have in ſeveral other inſtances experienced its beneficial effects, particularly in one caſe; a child long afflicted with ſcabby face, and become a ſad ſpectacle, obtained relief in a few days, and the face was perfectly clear in three weeks.

I am, your's,

With reſpect,

THOMAS ROLPH.

To Dr. Beddoes.

The Case of Dr. CRAWFORD, *Phyſician to St. Thomas's Hoſpital.*

To Dr. Beddoes.

Bennet-street, St. James's, Aug. 20, 1795.

DEAR SIR,

AS every incident reſpecting a character of ſuch celebrity as Dr. Crawford, muſt intereſt the public at the preſent moment, I am happy that the converſations which

paſſed betwixt him and me, were held in the preſence of others. Having related to him ſome cures performed by a *reduced atmosphere*, which I propoſe at ſome future time detailing at length; I next repreſented my own ſituation, and attributed my recovery from phthiſis 1ſt. to my breathing an atmoſphere with a diminiſhed proportion of oxygene; 2dly to my exhauſting that principle by continued exerciſe on horſeback, as well as from the quality of my food; and 3dly, to my increaſing the powers of the abſorbents by the vertiginous motion on ſhip board, and now and then by a nauſeating emetic.

I mentioned alſo my freedom from complaints in my cheſt, while in the moiſt air of Cambridge, and that having not long back gone to Oxford, to ſee ſome friends at the Univerſity, I was almoſt immediately affected with pains under the ſternum, and had other marks of pulmonary affection. "You are right," Dr. Crawford exclaimed with an emphaſis I ſhall never forget, ſo contrary was it to his mild character. "I was obliged to remove from the ſharp air of Ken-"tiſh-town, which I am certain did me harm, to the "ſofter air of Somerſtown: but in my caſe there are "counteracting cauſes, and my ſtomach and bowels are "in ſo weak a condition, that I fear I ſhall not be able "to give your air a fair trial. Neverthleleſs, I am fully "perſuaded of the theory ſuggeſted by Dr. Beddoes, "and I have endeavoured to make its importance be "attended to by the faculty; and if the hydro-carbo-"nate does not ſucceed with me, it will be underſtood "why thoſe who have weak digeſtive organs ſtand a "poor chance in pulmonary complaints, which is a "ſtill further corroboration of the juſtneſs of the

" theory." We discoursed then on the theory of the hydro-carbonate, and he was of opinion with you, " that as this factitious gas produced a far greater effect " on the animal œconomy, than either inflammable or " azotic gases, its action could not be solely the exclu- " sion of oxygene from the blood, but that the carbon " combined with the small portion of oxygene already " there, and formed with it fixed air." Having prepared the hydro-carbonate according to the direction of this able chemist, Dr. Crawford inhaled after dark nearly a quart diluted with 500 pints of common air. He declared " that it transfused over his body at the time a *soothing tranquillity*, such as opium is known to produce, but with slight vertigo." The following day he mentioned to me and Mr. Hill the circumstance of the *correction* of the offensiveness of his expectoration, which he said, " he wholly attributed to the hy- " dro-carbonate air, as he had often taken myrrh and " quassia without this effect." Dr. Crawford omitted the laudanum at night, which he had been accustomed to take to check a diarrhœa, which disorder unfortunately recurring, he was defeated in his hopes of the hydro-carbonate supplying with him the use of opium. He however inhaled a second and third time the modified air, soon after which he went to Lymington, " with a fever," as he told me, " on his spirits," and there in a few months this great and good man paid the debt to nature. Nearly about the same time I was requested to go to Southampton, to attend Mr. Adams, the optician, who laboured under a similar disease of the chest; so reasonable are the suggestions, which the new chemistry has introduced into minds nurtured in philosophy; I have only to regret, that my medical

engagement

engagements in London, were ſuch, as prevented my making in theſe intereſting caſes a full trial of the aerial practice. I am, &c.

R. I. THORNTON.

AT the time of Dr. C.'s inhalation of hdc. I received an account correſponding with the above; but had no idea of putting it into print, ſuppoſing that three quarts of hdc. taken at three different times, in a caſe of conſumption, were much the ſame as if none had been taken. It is only in compliment to Rumour, that I now publiſh a fact ſo totally irrevelant. T. B.

Note from Mr. Yonge.

Auguſt 27, 1795.

I TRIED by way of experiment how long I could retain one inſpiration of common atmoſpheric air, with a ſtop-watch before me, and found it to be twenty ſeconds. I then inhaled common air mixed with nearly an equal part of oxygene air which I ſuppoſe enabled me to retain it 32 ſeconds. Laſtly, I inhaled oxygene, ſuch as manganeſe yields. This was retained, by nearly the ſame effort 55 ſeconds, without that ſenſation of heat in the ſtomach, which reſembled the feel occaſioned by weak peppermint-water, and which I had experienced before, upon inhaling diluted oxygene.

GUSTAVUS YONGE.

Note from Mr. R. Edgeworth.

June, 1795.

I CAUGHT cold: next day had great tightneſs over my cheſt. I breathed at ſeveral intervals a bag of modified air; during the time I felt giddy, and was obliged

obliged to desist for some minutes. My tightness however was completely carried off and did not return. My cold became quite trifling. R. E.

The quantity of air respired was five quarts of hydrogene with near 35 of common air.

Letter from Mr. Sandford.

Worcester, *August*, 1795.

DEAR SIR,

WHEN I had the pleasure of spending a few hours with you sometime since at Clifton, I think you informed me that you were of opinion, the carbonic acid air might be useful in consequence of being absorbed by the skin, though there should be no breach or ulceration. This conversation I believe arose in consequence of an idea suggested by Mr. Jeffreys, viz. "whether it might not be found advantageous in cancerous diseases, *before* ulceration commenced, to puncture the tumour in order to admit the aeriform remedies."

That the virtues of charcoal when *externally* applied, have been manifest *without any ulceration*, the following reports, will, I presume, be admitted as proofs.

CASE I.—T. P. æt. 54, came to the Worcester Infirmary May 24, 1795, with a mortification of the left foot and leg, extending half way up the thigh. About a fortnight before his admission, Dr. Johnstone being at the house where the patient resided was desired to visit him. The Doctor has since favoured me with an account

account of the ſtate in which he found him. "His "pulſe tremulous and vacillating, very low and quick, "his foot ſwelled, and the leg as high as the calf of "a dark gangrenous colour, with ſlight veſications.— "His abdomen, inflated, hard, and tumid, with fre-"quent evacuations of thin dark coloured fæces; his "tongue black and dry, extreme reſtleſsneſs and low-"neſs: I allowed him cider in abundance, and pre-"ſcribed Cort. Peruv. pulv. 2 ſcr. Caſcarill. ſcr. ſſ. M. "alternis horis ex Cyath. Vin. Oport. rubr. The "carbonic cataplaſm, prepared in the manner men-"tioned in the 2d. edition of *Conſiderations*, p. 125. "was ordered to be applied, and I adviſed the patient "to go to the Infirmary."

He was admitted an in-patient as before-mentioned, on my day of receiving patients. The poultice had by this time produced a great change for the better, in the colour and appearance of the leg and foot, but the thigh was now alſo become hard and inflamed. Some of the veſications had terminated in ſmall abſceſſes, which diſcharged good pus. The charcoal poultice which ſeemed hitherto to have had ſo good an effect in checking the progreſs of gangrene *before* any ulceration had been formed, was ſtill continued, and with the moſt beneficial effects; he was put upon a courſe of the extract of oak bark with Caſcarilla, and took likewiſe lb. ſs. of port wine made into negus, at firſt in the courſe of 12, and afterwards in 24 hours.— The poultice was continued to the leg and thigh, for upwards of a month after his admiſſion, and was then laid aſide and mild digeſtives were applied to the ſmall ulcers which were even now very numerous, and prin-

cipally

cipally ſituated in the general direction of the external lymphatics from the foot to about the middle of the thigh: theſe, though very troubleſome and painful during their formation ſoon granulated with a healthy aſpect: and when his appetite was reſtored, he laid aſide the uſe of wine and was allowed lb. ſs. of ale per diem, in its ſtead. He took occaſionally a grain or two of opium at bedtime, when the pain in conſequence of the formation of the little abſceſſes required it—theſe were all ſuffered to break ſpontaneouſly, and of courſe healed ſooner.

The man was diſcharged with the perfect uſe of his limb, and Auguſt 1ſt, was made an out-patient till he recovered his general health.

CASE II.—W. G. æt. 75, was entered in the liſt for admiſſion as an in-patient of the Worceſter Infirmary, Saturday July 4. At that time there being no room in the houſe, he was obliged to remain an out-patient till the following week. He had at this time ſeveral ſwellings of the carbuncle ſpecies, extending from the neck along the courſe of the lower jaw on the right ſide, and one, particularly hard and livid, juſt below the condyle of the jaw; his pulſe was feeble and, his whole frame in a ſtate of extreme debility. Dr. Seward, the receiving-phyſician of the week, examined him with me, and recommended a generous diet, together with bark and opium internally. Though I almoſt deſpaired of any good effects from the application of charcoal *before* he could be taken into the houſe, yet I determined to make a trial of it in this caſe, and the man's wife (who came with him) appearing an intelligent woman, I gave her directions how

to

to prepare the poultice, to which ſhe promiſed faithfully to attend. The Saturday following a bed was reſerved for him in the Infirmary, and I was very much ſurpriſed to find the extraordinary good effects the treatment had produced. It was not found neceſſary to continue the poultice after his admiſſion, more than three or four days, every ſymptom of gangrene had diſappeared; his appetite began to return, and he was now directed to take the extract of oak bark with aromatics and chalybeates. Some of the ſwellings had entirely ſubſided, and the largeſt was conſiderably reduced, and diſcharged a ſmall quantity of well-digeſted matter. A plaiſter of ſoap cerate with camphire was applied over the tumour, and renewed every ſecond or third day, as occaſion required; this in a ſhort time removed the hardneſs, and the man after being three weeks in the houſe, was recommended to go into the country again, in order to eſtabliſh his health, which had been much impaired by his complaints.

CASE III.—E. M. æt. 40. had been troubled upwards of two years with an affection of the noſe, that withſtood a variety of applications, as well as internal remedies. For the laſt twelve months ſhe applied mercury in various forms to the part, and took many of its preparations internally, joined at different times with antimony and hemlock; poultices and fomentations of hemlock were alſo had recourſe to, and perſiſted in the uſe of, for a conſiderable time without affording any relief. For the laſt month ſhe has applied the carbonic poultice in the evening, and kept it to the part till the next morning. *This* application has already produced the moſt beneficial effects; though fixed air had been applied in immediate contact with the

the part, from the mouth of a phial containing the effervefcing mixture, without effecting any relief. The point of the nofe, which had lately a very carcinomatous appearance, has now loft its hardnefs, inflammation, and pain, and the fmall tubercles and cracks have entirely difappeared. How it may finally terminate it is impoffible for me to pronounce, but fince the charcoal cataplafm has been applied, its general appearance has been much more favourable than from any previous mode of treatment. The fequel of this cafe you may depend upon having.

When ftill farther experiments have been made with charcoal, it will, I doubt not, be found one of thofe fingular fubftances, whofe peculiar effects have for a great length of time efcaped the obfervation of men of fcience, till by the recent difcoveries in chemiftry its extraordinary powers were made known to fociety.

I am, dear Sir, your's, &c.

To Dr. Beddoes. W. SANDFORD.

P.S. A Lady to whom I recommended the ufe of charcoal-powder as a dentrifice, was fubject at times to violent tooth-ache, from one of the dentes fapientiæ that was become carious. She one day when in great pain filled the cavity of the tooth with the charcoal dentifrice, and was furprifed to find herfelf in a few feconds perfectly free from pain. It might probably be urged, that *any* fubftance filling the hollow of the teeth mechanically, and thereby preventing the accefs of atmofpheric air, would produce the fame effect. But I am rather inclined to attribute the *temporary* good effect experienced in this cafe, to the power of the charcoal—*Query*. Could the oxygene in the tooth by a combination of thefe two principles act as carbonic acid air ?

August

August 30, 1795.

I HAVE now the pleafure to inform you that E. M.'s nofe is perfectly well. This is a proof of the fingular efficacy of charcoal after the failure of every other medicine.

W. SANDFORD.

I HAVE endeavoured elfewhere to fhew that carbonic acid fpecifically ftimulates the abforbents. The foftening of glands was very evident in a cafe of cancer—I think charcoal has the fame property. This important cafe feems to prove it. For how could the tumid nofe be reduced without greater action of thofe veffels? In the application of charcoal poultice to bad legs where the fkin was broken I have feen other proofs of this fact.

T. B.

September 3, 1795, *Bennet-street, St. James's.*

DEAR SIR,

IT gives me fincere pleafure to be able to fend you the following very fatisfactory letter, which completes the evidence in favour of your opinion, refpecting the effects of fuper-oxygenated air in cafes of *ill-conditioned* ulcers of the leg. The reader will find thefe views in the letter to Dr. Darwin, which you publifhed June 20, 1793, page 56 to 59, and which led me firft to the trial of the vital air in the complaints you enumerate there.

I am, &c.

R. I. THORNTON.

September 1, 1795, Store-street.

SIR,

I WAS about eighteen years diſtreſſed with a dreadful humour covering the whole of the lower part of the left leg. It aroſe from water firſt in that part, and a tendency to the dropſy. I was four years under Surgeon Pott, 27 months under Sharp, 9 months under Blick, 27 months under Wade, and for ſome time under other eminent ſurgeons, but the humour continued as before. Previous to my attendance on Mr. Hill, I was very bad indeed, in great pain, and not able to walk fifty yards. After a fortnight from inhaling the vital air, I felt a moſt intolerable itching in the leg, and ſoon after the humour ſcurfed away, and the leg was healed. It is now eleven months, and I have felt no pain whatever, nor has even a pimple appeared on the part, and as before I could not walk an hundred yards, now nothing impedes my walking but my corpulency, which aroſe from my former confinement.

I am, Sir,

Your obedient Servant,

ELIZ. MUNT.

To Dr. Thornton.

Observations on this case.

1. IN fat people I have obſerved that ſuper-oxygenated air uſually creates ſome diſturbance in the ſtomach. This at firſt ſurpriſed me, but did not the ſuper-oxygenated blood feed upon the elements of fat, and thereby prevent the ſupply of food from the ſtomach, and that organ being robbed in ſome meaſure of its office, might it not at firſt feel the want of its cuſtomary action?

4. Fat

4. Fat people I obſerve are longer in conſuming a given portion of air than others.

5. In the preſent caſe ſtrong occaſional evacuations were employed. In the intervals bark with the tincture of the ſame, and myrrh were given to ſtrengthen the fibre and promote the conſent which exiſts betwixt the ſtomach and the lungs.

6. The average doſe of air employed, was 1500 pints of atmoſpheric air, ſuper-oxygenated with from three to four quarts of vital air. R. I. T.

August 1, 1795. Islington.

SIR,

FOR more than two years the whole ſurface of my face was covered over with eruptions. To deſcribe my real ſtate would be as diſguſting for you to hear, as it was diſagreeable for me to bear. I had tried different purifiers of the blood, but the humour in my face continued the ſame. Hearing that the vital air altered the ſtate of the blood, about nine months ago I placed myſelf under Dr. Thornton's care, and began the inhalation of the vital air. In leſs than ten days I felt a very great itching, which I do not remember to have had before. The itching however ſubſided, and my face was quite cleared in about a month. This ſtate continued four months, when I had a relapſe, but it ſoon gave way to medicine, and my face has continued ſince perfectly clear or only here and there a pimple appears.

I am, &c.

JOHN CUMMINS.

Observations on this Case by Dr. THORNTON.

1. THIS patient in early times had led rather a free life, and of late he could not get to ſleep unleſs he took a certain portion of wine in the day. Does not this caſe, therefore, confirm your opinion reſpecting the effects of vinous liquors, and did not the hydrogenous principle which abounded in his ſyſtem manifeſt itſelf by the humour covering his face?

2. As the ſame quantity of liquor was taken as before, and only three ſix-ounce phials of bark with myrrh, may we not aſcribe this cure chiefly to the artificial oxygenation of the ſyſtem?

3. As the body abounded in hydrogene, a larger proportion than uſual of the oxygene air was given this patient, and it produced at the time a ſtrong perſpiration, and ſeemed, as he expreſſed it, to ſearch every part of his body.

4. When the relapſe occurred, he took an oxyd of of mercury, and the oxygenation of the ſyſtem through this means produced the ſame effect; but as being productive of nauſea, and violent griping; is not the oxygenation of the blood by the lungs, a more elegant and preferable mode? My patient obſerved, that while taking the vital air his ſtrength was increaſed, but when under the courſe of mercury it was greatly diminiſhed.

Observations by Dr. THORNTON, *on the latter part of* Dr. PEARSON'*s Letter.*

AS the public are ſo eaſily *prejudiced* againſt *new remedies*, and wiſh ever to be cured by inert ſubſtances, acting

acting like charms, it may be necessary to comment on the evils that are said to arise from yeast, as mentioned by this judicious physician. To ascertain the action of remedies is of the first consequence; to discover their mode of action is the next, which paves the way for future improvements, and distinguishes the physician from the empiric. In no instance has vomiting occurred with me, from the exhibition of yeast (the stomach and bowels being first cleansed) but such effects as resemble *hysteria*, and the continued eructations of air, seem in my mind, to indicate the modus operandi. It was curious to observe, that when my patients plunged their arms into yeast in a state of fermenting, it produced *eructations*. I happened lately to get a dreadful scald, and the pain was excessive; I tried yeast poultices, and obtained almost instant ease. Do not the effects of the fixed air, and of the carrot and yeast poultices in cancer, clearly shew that they act by one and the same principle? The same may be observed of mortification. Knowing the effects of wind on the stomach, can we then doubt of this being the prime agent? Not that I mean to deny the *bitter principle of the hop*, any more than the neutral basis of the effervescing mixture: but I would place it in the secondary station. The question was I think cleared up by the Geneva, which soon banished the wind, and gave relief. It may at once be decided by this able chemist, if he will first extricate the air from the yeast, and then exhibit it in cases which may demand its bitter and narcotic qualities.

Letter from Dr. THORNTON, *On Inoculation.*

Bennet-street, St. James's, Sept. 1, 1795.

DEAR SIR,

THERE is no plaufible reafon againft *general inoculation*, but the danger which pregnant women run.— From your explanation of the change wrought on the conftitution by child-bearing, I conceived an hope, that this great improvement in medicine, admitted even of farther perfection. I fixed upon the month of May, 1794, to afcertain this point, and as the fmall-pox is evidently inflammatory, I chofe this month in preference to March or April, when the fibre, rendered more irritable by the preceding winter, is ftrongly affected by every ftimulus; as alfo for another reafon, in order that my patients might live upon goofeberry food, which is not only pleafant and nutritious, but affords to the fyftem *oxygene* uncombined with *caloric*, and acts alfo as a mild aperient. Having firft well cleanfed the inteftinal canal, with rhubarb and vitriolated kali, I followed your idea of greatly diluting the variolous matter,* and in order that as little as poffible might be carried by the abforbents into the fyftem, I gently raifed with a lancet the fkin on the deltoid mufcle of the left arm, and when all inflammation was fubfided, I inferted under the fmall fcratch the dilute variolous matter with the point of a needle.

In the firft trial a circle of inflammation, refembling the bur of the moon in a mifty night, was obferved around the place where the variolous water was inferted, and the arm rofe a little, but no eruption whatever appeared. Mr. Sadler, who lives at No. 86, Tottenham-

* See the obfervations fubjoined to the tranflation of Mr. Gimbernat on Hernia.

Plate III.

Fig. 2.

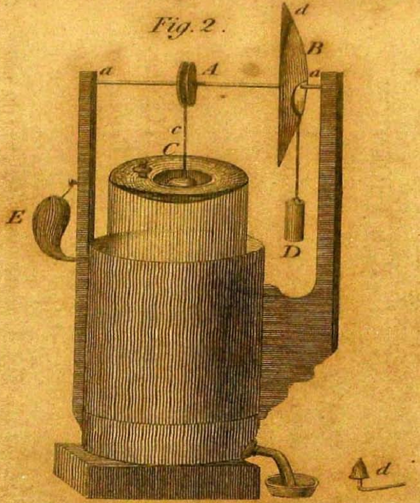
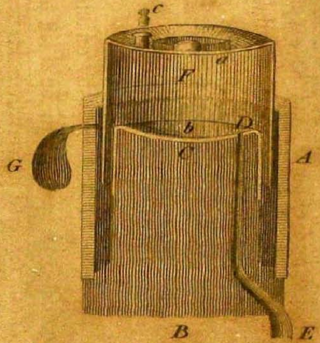


Fig. 1.



Tottenham-court Road, feeing the young lady have the diforder fo remarkably kind, wifhed me to inoculate his only child, and I purfued exactly the fame plan.— No rifing of the arm, or eruption appeared; one day only the little girl complained of head ache. I have alfo had a third example, and no eruption whatever has appeared, or any after-evil, and the little patients have enjoyed uninterrupted health, and they have been expofed frequently to the infection, without having taken it, which leads me to the perfuafion, that they are perfectly fecure, and to hope that *the only objection* againft *general inoculation* may by an attention to the fuggeftions you have given, be at laft obviated, and the difeafe rendered univerfally mild: but this I mention only as a fuppofition, to be refuted or confirmed by future experience.

I remain, &c.

R. I. THORNTON.

P. S. Mr. C. Gimbernat informs me that the practitioners in Andalufia, give *vinegar* to their fmall-pox patients with the greateft fuccefs.

Description of a MERCURIAL APPARATUS, *suggested by an infpection of Mr. Watt's Machine for producing and containing Factitious Airs, by* Mr. WILLIAM CLAYFIELD, Briftol.

PLATE III. Fig. 1. reprefents a fection of the machine, which confifts of a lignum vitæ cylinder A. fcrewed to the folid block B. covered at top by the glafs cap C. having a hole at D. for the paffage of the air through the conducting-pipe E. into the moveable glafs receiver F.

To

To an axis turning on the points a a. fig. 2. is adapted the wheel A. of ſuch a diameter, that by the winding of the cord c. in one revolution, the receiver may be raiſed to the ſurface of the mercury. To one end of the ſame axis is fitted the wheel B. over which the balance cord runs in an oppoſite direction in the ſpiral groove d.

Suppoſe the receiver to be loaded with a weight C. ſomething heavier than may be neceſſary to force it through a column of mercury of the ſame depth, and that the balance weight D. equal to the exceſs, hangs from that part of the ſpiral where the radius equals that of the wheel A. and in proportion as the column of mercury forcing up the receiver, diminiſhes during its filling, let the radius of the ſpiral increaſe; ſo that in every ſituation the weight D., may be an exact counterpoiſe to it. As in this way the leaſt poſſible friction will ariſe, plunging the orifice of the tube E. a quarter of an inch below the ſurface of the mercury, contained in a ſeparate veſſel, will be found ſufficient to overcome every reſiſtance, and will force the gas diſcharged from the beak of a retort into the receiver where, whatever may be its quantity, it will ſuſtain a preſſure exactly correſponding with that of the atmoſphere; and by graduating the edge of the wheel the balance cord may be made to indicate its volume.

The convexity at the top of the receiver a. fig 1. fills up the concavity of the cap b. for receiving the fluids it may be thought proper to indroduce, by withdrawing the ground-ſtopper c. and in the ſame way we introduce a lighted taper; or a fluid may be drawn to the cap, by only plunging the orifice of the tube E. below

below its ſurface, and then raiſing the cylinder; by cloſing this orifice with the perforated cork and bent tube d. the air may be conveyed from the cylinder to any other veſſel. The gum elaſtic bag at G. fig. 1. is intended to contain the mercury diſplaced by the deſcent of the receiver which may be returned during its riſe, by inſerting it as at E. fig. 2. The joint at the ſcrew muſt be carefully ſecured with thin ſoft leather.

W. C.

CONCLUSION.

THE continuation of my experiments on animals and animal ſubſtances, I find it neceſſary to defer, not having yet provided myſelf with an apparatus accurate enough to determine the quantity and quality of the reſiduary air.—Meanwhile, any perſon may ſee the extraordinary *reddening* effect of hydro-carbonate air, by ſuſpending a ſmall ſlice of veal in a phial filled with this air. Hydro-carbonate air is not decompounded by blood or fleſh ſo as to be rendered more inflammable. On the contrary, hydrogen from zinc is rendered leſs exploſive: whether one or the other is abſorbed remains to be tried.

Numerous trials having been made with airs in medicine, with ſo little detriment, or with ſucceſs ſo conſiderable as to warrant a proſecution of the practice, I have annexed a ſynoptical view of the publiſhed caſes. This view will lead to reflections on the effect of unuſually deep inſpirations ſimply, and of various degrees of dilution of artificial airs. On the ſubject of dilution I have to add the following memorandum from Mr. Watt. It reſpects his letter, p. 34, 35. "Though I

"mentioned

" mentioned to Dr. Thornton my approbation of di-
" luting the factitious airs in general, I had no idea of
" carrying it so far as he has done. My notion was,
" that the airs might be advantageously mixed with 30
" or 40 times as much common air, when they are to
" be breathed out of a bag; but that in cases where
" the air of a room was to be modified by factitious
" air, the dilution might, and must be carried much
" farther; especially in the use of hydro-carbonate, a
" cubic foot of which will very sensibly affect the air
" of a room 12 feet square and 8 feet high, as I know
" by experience. I have not tried the effect of oxy-
" gene air in similar circumstances, but should expect
" they would be less sensible. As I conceive Dr. T.
" to have been led to such dilution by observation as
" well as theory, I must believe his practice to be
" right. It is by no means my intention to criticise it.
" I only wish to explain what I mean by *dilution* in
" my letter to him."

August 7, 1795. J. W.

The reader may expect from me some general reflections on the effects of airs. But many hundred more observations must be collected and compared, before a theory can be established. The *immediate* operation of oxygene is doubtless to render the action of the heart and arteries stronger. Among its remote effects may be reckoned an increase of the red colour of the blood, where this is pale, and heightening of the complexion. The conjecture that it exhausts less than other equal stimulants is still undetermined. Other remote effects require further inquiry.

Hydro-carbonate

Hydro-carbonate air weakens the aƈtion of the arterial ſyſtem while it is reſpired. But ſo would the mere abſtraƈtion of oxygene. *Does the venous blood, changed as it is by hydro-carbonate, stimulate the veins more than the dark blood they usually carry?* Does this air ſtimulate the abſorbents? In conſumption it has been obſerved, (and I have ſeveral times noticed the faƈt in the laſt ſtage of conſumption) that the expeƈtoration is diminiſhed, when hydro-carbonate is adminiſtered. Perhaps other phœnomena might be brought to ſupport this ſuppoſition. But I ſhall not dwell upon it at preſent. It may not be quite ſo eaſy to determine when the veins are ſtimulated. Dr. Darwin mentions paleneſs as ſometimes a ſign of this.—Leſs ſpungineſs of the gums, may, I ſuppoſe, alſo be regarded as the ſign of a *tonic* effeƈt on the veins; that is, of their aƈtion having become permanently ſtronger.

I know not if any anatomiſt has yet thought of employing the rubefacient effeƈts of oxygene or hydrocarbonate air, for aſcertaining the doubtful ſtruƈture of certain parts. The latter appears very capable of ſuch application; as the blood tinged by this air paſſes beyond the reach of the moſt penetrating injeƈtion.

TO WILLIAM REYNOLDS, of *Coalpit Bank*, JOSEPH REYNOLDS, of *Ketley*, and WILLIAM YONGE, of *Shefnal, Shropshire.*

YOU see how far the undertaking, which you so liberally encouraged, has advanced. We all looked for opposition; nor have we been disappointed. But it was hardly to be expected in the shape in which it came from the enraged London Apothecary. Sir Jeremiah's statement of this transaction, I know on the best authority, to be exact. The alternative was offered to one of the patients, whose case you have read above in his own words. As to the young lady, Sir Jeremiah's conjecture was right; she never became the subject of experiment. A few days before her death, her father applied to me in an agony of distress; he inquired if it was possible to assuage her sufferings by any means. But nothing was attempted.

When I write the secret history of the pneumatic practice, I flatter myself I shall afford you some entertainment. Among the Doctors whom high-born patients imagine to opine *with full cognizance of the subject, you will wonder to find one taking oxygene for fixed air, and another for the phlogisticated air of Dr. Priestley. Such is the alliance between intrigue and information. How do you think a surgeon in the metropolis went about to apply fixed air to a cancerous ulcer? I should never have guessed. But I am assured that he held the mouth of the retort, spouting acid foam, to the part. The liquor dropped on the lady's cloaths; the sore set to smart: and how could the poor tortured patient refrain from wondering that there should be in the world people wicked enough to recommend such abominable applications? She did not, I dare say, know that her surgeon might have equally succeeded in burning her gown and increasing her sufferings with his vitriolic acid, even though he had not taken the trouble to work it up into froth with fixed air.*

In spite of such mishaps, aided by the propagation of untruths and the terror of imprisonment, the following reasons persuade me that factitious airs must have a full trial in medicine and surgery. 1. *No body will imagine that all the persons who have transmitted to me their narratives,* could *mistake or* would *misstate their own feelings.* 2. *In different cases of the same disease, the results, whether favourable or unfavourable, are analogous.* 3. *There must be discernment enough out of the profession to enable many persons to perceive that no detriment to the public can result from the inquiry, the trial being perfectly safe with a small portion of prudence and intelligence.* 4. *Men of science abroad have entered with alacrity into the proposal, and foreign academies are offering premiums for an investigation of the virtues of factitious airs.* 5. *That ingenious people, which has nearly conquered leisure for cultivating the arts of humanity, will assuredly not neglect a study so closely allied to the pursuits in which it has already excelled.* 6. *The reports respecting Atwood, Danby, Miss L——, Munt, Mrs. S——, Trayhern, with a variety of asthmatic and phthisical cases, shew that the pneumatic treatment has alone performed or materially promoted the most splendid cures. Now it is evident that the practice is in the most helpless period of its infancy. We scarce know what kinds or combinations of air are best suited to the different stages of different diseases. I do not therefore think, that the facts hitherto observed form any criterion of the merit of the method. Failure should be an incentive to exertion, and partial be regarded as the omen of more complete success, in consequence of the improvements which will infallibly suggest themselves.*

If I should publish the secret history, of which I have spoken, would you not advise me to dedicate it to a certain fashionable physician, who has the happiness of being the supreme favourite among fine ladies? Do you think a dedication would be a spell potent enough to confine his tongue within the circle of fact? I am not much inclined to stoop to an exposition of his artifices.

It

It would be difficult to avoid the imbecility of complaint; and personalities are always more or less odious. So I believe flattery will be the best resource.—As to minor opponents, were I a wit, it would be as easy to manage them by lampoon as their superiors by dedication. Observe for instance how naturally the apothecary's cool and flowing address runs into rhyme.

You *breathe indeed! do d—mme if you dare,*
Take one ounce measure of their cursed air!
Look, here's your bill—pay that, Sir — if you fail,
You take, by G—d, your next night's air in jail!

T. B.

CLIFTON, SEPT. 14, 1795.

Medical Pneumatic Institution.

Between eight and nine hundred Pounds have been subscribed. The Names of the Subscribers, except a few which I have not yet learned, are as follow :

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Ewart, John, M. D.
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Fyfe, Andrew, Surgeon, Lectures, Edinburgh
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Gell, Vice-Admiral
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Gimbernat, Antonio, Surgeon
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Greive, B. Efq.
Guillemard, John, Efq.
Hall, W. Efq.
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Hall, Major
Hart, T. Efq.
Hawes, T. M. D.
Henry, T. Mr. Apothecary
Hill, Mr. Surgeon
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Hobhoufe, Benj. Efq,
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X. Y. Z.
Yonge, Gustavus, Surgeon
Yonge, W. Surgeon.

ADDITIONAL CASES.

Birmingham, Oct. 9, 1795.

Letter from Mr. BARR, *to* Dr. BEDDOES.

DEAR SIR,

I ANNOUNCE to you with much pleaſure the cure of a caſe of hydrothorax, which had exiſted for a conſiderable time, and notwithſtanding the application of every known and approved remedy, had reduced the ſubject of it nearly to the laſt ſtage of human ſuffering.

Mr. Barbor, of Barton-under-Needwood, being in this town on a viſit to a friend in the ſpring of 1793, was ſeized with an highly inflammatory fever, attended with a violent pain of the ſide. This fever was followed by a dry tickling cough, a ſenſe of tightneſs in breathing, much languor, and a great degree of reſtleſsneſs and anxiety. His bowels felt full, tenſe, and uneaſy; his pulſe intermitted; and he complained that his urine, though nearly in the uſual quantity, did not flow freely, and that he had always the ſenſation of not having evacuated the whole. Bliſters, boluſes of triturated mercury, and a decoction firſt of Peruvian, and afterwards of Auguſtura bark were preſcribed. He was relieved by theſe medicines, but he neither recovered his ſtrength nor his ſpirits. In this ſituation nearly he paſſed the remainder of the year in the country; in the ſpring of 1794, he came to Birmingham again, with all the ſymptoms of his diſorder very much increaſed, particularly the oppreſſion in breathing. He could neither lie down in bed with comfort, nor aſcend the ſmalleſt acclivity without great uneaſineſs. His urine was dimi-

niſhed iu quantity and voided with difficulty. A decoction of Seneka root and ſmall doſes of Digitalis were directed and continued for two or three weeks; but they rather ſeemed to amuſe than to relieve him. He called on me again in April laſt, and told me that all medicines had loſt the power of relieving him; that his breathing was more generally difficult, that his urine was very ſcanty, and that his appetite was entirely gone. I preſcribed the Digitalis and a bitter infuſion for him. He went into the country and continued theſe medicines for ſome time. Towards the end of July he called upon me again—but, alas! how changed! His face was now become pale and emaciated, his eyes ſtared as if taking a laſt conſcious view of their object; this circumſtance alarmed his friends exceedingly.—His legs were ſwelled to ſuch a degree that the ſkin was become much inflamed, and in danger of burſting; he had a continual teneſmus, and made very little urine; he could not endure a horizontal poſture for a moment, but was under the neceſſity of being bolſtered upright in bed through the night; even then he ſlept little, and that little was diſturbed and unrefreſhing, for he frequently ſtarted from his ſleep under an impreſſion of inſtant ſuffocation.

I had then ſeen a proof ſheet of your appendix containing an account of the happy relief Sir William Chambers had experienced from oxygene in a ſimilar ſituation; I mentioned it to my patient, and adviſed the adoption of the pneumatic plan; I did this, I confeſs, with little hope of advantage, but as the moſt powerful medicines had produced no ſalutary effect, I felt it my duty to him, as well as to the cauſe of humanity, to urge his compliance. I procured him a reading

ing of the cafe, and the fimilarity of the circumftances was fo ftriking, that he agreed to come to Birmingham, and place himfelf under my care.

He arrived here on the 12th of Auguft, and began to infpire the factitious air on the 13th, I directed one quart of oxygene mixed with nineteen of atmofpheric air, to be inhaled every day; but as the fymptoms were become extremely urgent, I thought it right to join the ufe of thofe active medicines that I had prefcribed for him before. Accordingly I directed him to take half a grain of Digitalis in fubftance, every evening, and four ounces of a decoction of Auguftura bark in the courfe of each day. On the third night after infpiring he found himfelf more compofed, he could remain longer in one pofture, and the ftartings during fleep, feemed both lefs frequent and lefs violent. Every night he was fenfible of amendment; in ten days he could bear the removal of feveral of the pillows that bolftered him up in bed; and he could fleep for three or four hours without one ftarting fit. The fwellings of his legs too began now to fubfide; the tenefmus was entirely removed; the quantity of urine was much increafed, and he could walk up ftairs with much eafe; his appetite and cheerfulnefs began to return, and the pale face of difeafe to give place to the florid countenance of health. In the courfe of the fecond week I had gradually increafed the quantity of oxygene to two quarts a day, diluted as before. In four weeks from his beginning to infpire the vital air, not a veftige of the diforder remained, except weaknefs; he could lay his head as low in bed as when in perfect health, and fleep the whole night; no fwelling of the

legs

legs remained, no difficulty of breathing upon ordinary exertion, and every function was performed with regularity and eafe. He then went home provided with oxygene, and directions how to ufe it, and laid afide the ufe of all medicines except a laxative pill occafionally. He paffed through this town yefterday in perfect health. His ftrength, agility, and vivacity are greater than in moft men at his age (60).

This cafe, in my opinion, will add to the credit of pneumatic medicine; for though I employed medicines along with the oxygene, yet let it be remembered that the fame remedies had been repeatedly taken without advantage, and before the diforder had made fuch alarming progrefs; add to this, that during the intermediate periods of the little hiftory which I have given, Mr. Barbor had confulted fome of the ableft and moft experienced Phyficians of the prefent age, and faithfully followed their directions without any material benefit. May we not therefore conclude that the art of medicine had exhaufted all its refources without effect, and that this Gentleman had remained a devoted victim, had not this new foe to difeafe ftretched forth her benevolent hand and fnatched him from mifery and death. This is the opinion of the worthy gentleman himfelf, of his family and friends, who have witneffed the whole proceedings. They have defired me to make it known to others, that thofe in fimilar circumftances of diftrefs may be encouraged to hope for eafe and health.

I am, dear Sir,

Your's very refpectfully,

JOHN BARR.

Extract

Extract of a Letter from Dr. REDFEARN, *To* Dr. BEDDOES.

ELIZABETH HOWLET, aged 41 years, has been afflicted with a pituitous asthma upwards of 16 years; attended with dyspnœa, troublesome cough, and a copious expectoration of mucous matter. She is also affected with flatulency, loss of appetite, and has great debility. Her countenance is pale and somewhat bloated; her pulse 100, weak and tremulous; she has often observed the extremities of her fingers to become of a livid colour.

On May the 20th, 1795, she began to inhale four quarts of oxygene diluted with eighteen of atmospheric air, every evening. The oxygene was gradually increased, and during the last two months, she has inhaled daily twelve quarts of oxygene mixed with ten of atmospheric air. Sometimes she has inhaled a cubic foot of recent oxygene undiluted, without experiencing any bad effects from it. She only mentioned a sensation similar to that from drinking pepper mint water, and an agreeable glow in her chest, after inhaling this quantity her sleep was always sound and undisturbed with coughing. September 20, she now relinquished the inhalation with much regret, after having used it for four months, and found her health much improved during its administration. The dyspeptic symptoms are entirely removed, and she is now enabled to make her own bed, which she has not been able to do for ten years past; she has also acquired a degree of corpulency which has surprised all her friends, and the livid appearance at the extremities of her fingers has totally disappeared; her cough and expectoration are much

PAGE NO- 118,119 MISSING IN ORIGINAL

" of determining by direct obſervations and experi-
" ments what utility mankind will derive from the me-
" dicinal uſe of factitious airs."

I am not ſufficiently acquainted with the ſpirit of my brethren in Spain, to be able to explain why they ſhould ſmile on a deſign which certain among the faculty† in London have thought proper to try whether their gravity can frown down. The Spaniſh Government perhaps contributed to the hoſpital mentioned by Mr. Gimbernat, who has uniformly employed his influence at Court in the ſervice of humanity. I have been aſked whether the Britiſh Adminiſtration would not aſſiſt in the eſtabliſhment of a pneumatic hoſpital in this country. My anſwer has been in conformity to the following principle. A government by corruption and by arbitrary authority muſt have many points of reſemblance. In ſome reſpects the deſpotic government will be more favourable to the intereſts of mankind. In a Government by corruption the members of adminiſtration employ all the wealth of which they have the diſpoſal to enliſt adherents and to keep themſelves in their ſtations. As the deſpot's will on the contrary has no oppoſition to provide againſt, thoſe who exerciſe the powers of government will always be at leiſure, and occaſionally be diſpoſed, to favour beneficent inſtitutions, when they do not directly tend to impair the authority of the Sovereign. This

† One ſaid, " either Dr. Beddoes muſt overcome the faculty, or the " faculty Dr. B. I do not believe the former event likely." By the *faculty* he meant, I ſuppoſe, ſome half dozen Doctors, who have contrived to get themſelves into vogue. So, Mr. Atwood, Mr. Danby, and all you, whom medicine, adminiſtered by the lungs, has benefited, this man would if he could, have cut off from you the ſource of eaſe and comfort. See what amiable ideas ſpring up in minds cankered by avarice and pride—pride founded on no ſuperiority of talents.

This argument *must*, I flatter myſelf, convince the reader that Mr. Pitt and his helpmates, under whoſe auſpices the nation is enjoying ſo much happineſs, and gathering ſo many laurels, would without ſcruple aſſiſt the deſign which I have ſketched. But I have the misfortune not to be advantageouſly known to theſe benefactors of myſelf and my neighbours. I therefore ſincerely hope ſome perſon who is not ſuſpected to hold their meaſures in abhorrence, and their abilities as ſtateſmen in contempt, will take the matter up.

Of errata, the number I truſt, will be found very ſmall. P. 4. l. 5. 85 ſhould be 75. and Mrs. Stephens is once called Miſs S.—In a work entitled *Medical Extracts* in which ſuch praiſe is laviſhed upon me as my conſcience diſclaims, it is ſaid, that I have diſcovered how to obtain oxygene and hydrogene airs at large from water. This is a miſtake. A perſon whom I had engaged as operator, aſſerted that he had made this diſcovery.

Having mentioned the *Medical Extracts*, I ſhall ſeize the opportunity of recommending the plates of the heart, publiſhed in illuſtration of that work.—— Deeming it of the utmoſt importance that all mankind ſhould be acquainted with themſelves, I wiſh to ſee the repreſentatton of anatomical objects in colours, encouraged and carried to perfection. Mr. Cruikſhank, in a little pamphlet (*Exp. on the inſens. perſpiration. Nicol*, 1795.) has juſt exhibited a beautiful ſpecimen of this art.

THE END.

N. B. The bag mentioned in Mr. Rolph's letter, holds 30 quarts.

Speedily will be published,

A CONCISE

VIEW

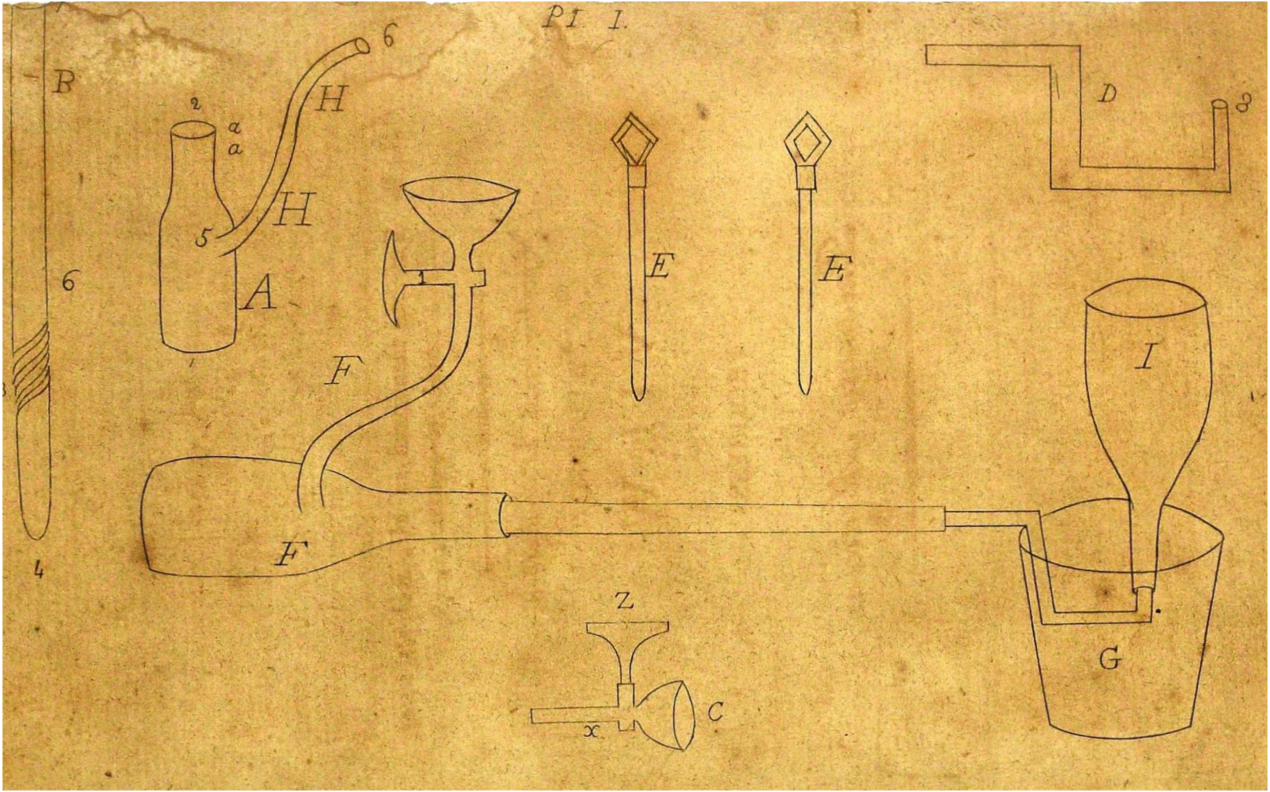
OF THE

PROGRESS

OF

Pneumatic Medicine.

Pl. I.



Pl. 11

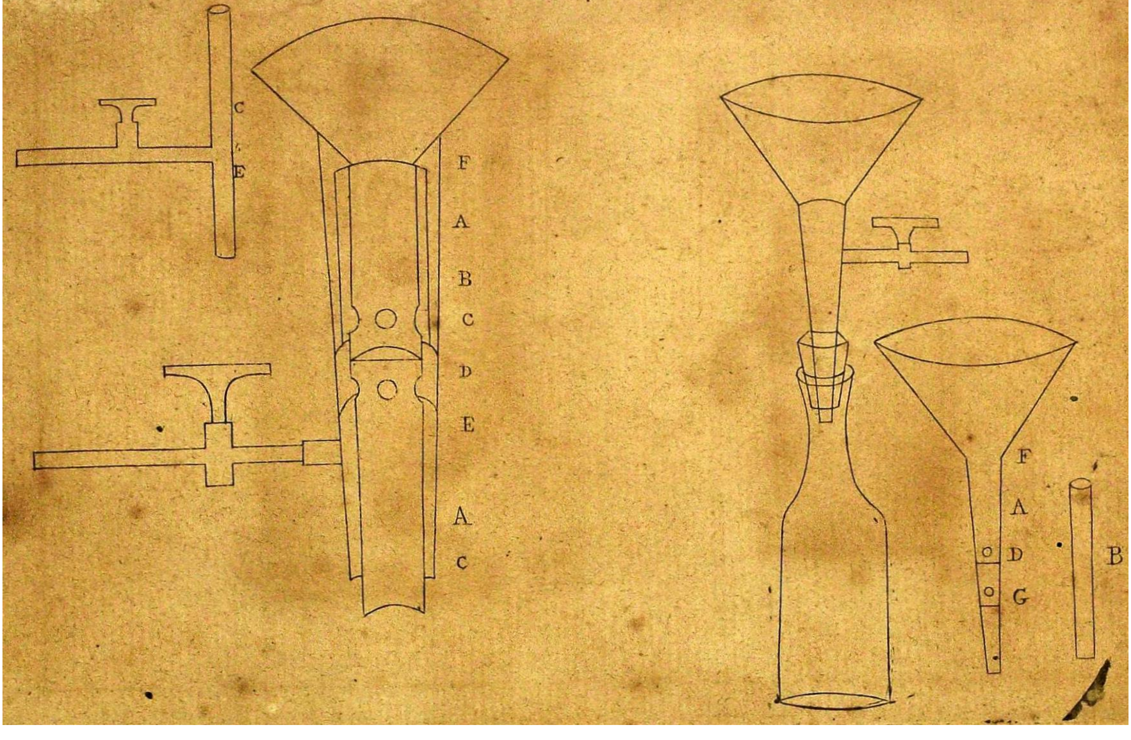


Plate III.

Fig. 2.

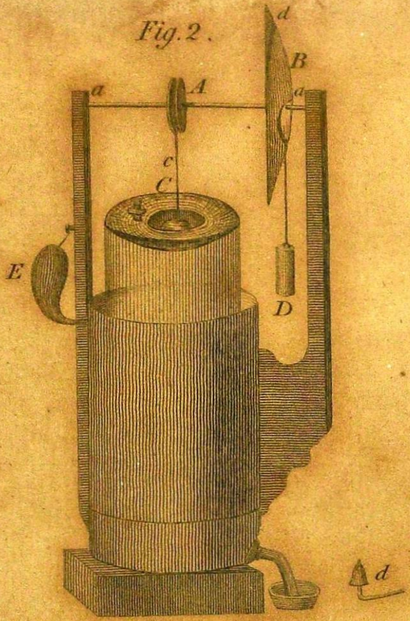


Fig. 1.

TABLE

OF

CASES IN WHICH FACTITIOUS AIRS HAVE BEEN EMPLOYED.

"Of my own obſervations it was my original determination to relate ſuch only as might inſpire caution . . . . . and to watch effects in the "character of an Adverſary."——CONSID. p. 8.

N. B. *A.* means the preſent Pamphlet.
C. The Second Edition of Conſiderations of Factitious Airs, by the Author and Mr. Watt. Johnſon.
Coll. Collection of Letters to the Author. Out of Print.
D. Dr. Ewart on Cancer. Dilly.
G. The Rev. Joſeph Townſend's Guide to Health. Johnſon, Robinſons, Cox.
M. Dr. Ferriar's Medical Hiſtories. Cadell.
M. Ex. Medical Extracts. Johnſon, Robinſons.
L. Letter to Dr. Darwin. Johnſon.
P. Dr. Pearſon's Short Account of Airs. Baldwin.
Z. Dr. Darwin's Zoonomia. Johnſon.

P.N. Patient's Own Narration.
Az. Azotic Air.
C.ac. Carbonic Acid Air.
Hdc. Hydrocarbonate.
Hg. Hydrogen.
Ox. Oxygen.
Dil. Diluted.

Ext. Extremely.
Mod. Moderately.
Lit. Little.
Occaſ. Occaſionally.
Ben. Benefit.
p. Permanent; has continued months.
pp. Very permanent; many months.

AMAUROSIS AND SENSES IMPAIRED.

Name.	*State in other Reſpects.*	*Medicines beſides.*	*What Air.*	*Circumſtances.*	*Reſult as to the Diſeaſe.*	*Authority.*
1. James Tobin.	General health, good.	None.	Ox. lit. dil.	Leſs chilly in cold weather.	None.	P. N. C. page 79.
2. B.	Amaurosis.	Veneſect.	Ox. mod. dil. afterwards hdc. dil.	Head-ach, reſtleſſneſs; a fit of apoplexy.	None.	Dr. Carmichael, C. 69.
3. nale patient.	Curious variations of imperfect viſion.	Aperient occaſ.	Ox. lit. dil.	Occaſional blindneſs laſts longer than uſual.	None,	Dr. Carmichael, C. 70.
4. Mead.	Water on the brain.	Mercury, aperients, and tonics.	Ox. lit. dil.	Sight reſtored.	Ben. great, not p.	Dr. Thornton, A. 9.
5. Boy.	Deaf; mouth awry.	Tonics.	Ox. mod. dil.	Wry mouth ſet right.	Hears better pp.	Dr. Thornton, A. 58.
6. ady.	Sight impaired.	Tonics.	Ox. ext. dil.	Health improved.	Sees better pp.	Dr. Thornton, A. 59.

ANASARCA, GENERAL, AND OF THE LUNGS. ASCITES.

Name.	*State in other Reſpects.*	*Medicines beſides.*	*What Air.*	*Circumſtances.*	*Reſult as to the Diſeaſe.*	*Authority.*
7. Mr. G. I.	Dyſpeptic: free liver.	Digitalis.	Ox. mod. & aft. lit. dil.	Dyſpepſia relieved.	Not cured.	Author, C. 157.
8. Mr. ——		Digitalis.	Ox. nearly pure.	No temporary advantage	Not cured.	Dr. Darwin, A. 76.
*8. Mr. Barker.	Free liver.	Many in vain: digitalis.	Ox. mod. dil.	Diſtreſs ſoon removed.	Cure.	Mr. Barr, A. 113.
9. Sir W. Chambers.	Age 75.	Bitters, aperient occaſ.	Ox. ext. dil.	Dyſpnœa removed.	Great ben.	P. N. A. 2.
10. Mary Leucraft.	Aſcites.	Crem. tartar.	Ox. mod. dil.	Complexion heightened.	Cure pp.	S. Hill, Eſq. A. 7.

ASTHMA, AND DYSPNOEA.

Name.	*State in other Reſpects.*	*Medicines beſides.*	*What Air.*	*Circumſtances.*	*Reſult as to the Diſeaſe.*	*Authority.*
11. A Lady.	Spaſm. Fit every four days.	None.	Hg. $\frac{1}{3}$.	Two ſhort fits in two months.	Conſid. ben.	Dr. Ferriar, Vol. II. page 227.
12. J. B——.	Humoral.	None.	Hdc. dil.	Relapſed from imprudence.	Great ben.	Dr. Carmichael, C. 101. A. 82.
13. Mr. ——	Humoral.		Ox.	Inhaled but once.	Much eaſe.	Dr. Ferriar, C. 82.
14. Mr. T——.	Humoral.	Tonics in the day, opium at night.	Ox. ext. dil. in the forenoon, and hg. dil. in the evening.	The diſeaſe appeared aggravated ſix weeks by the dil. ox. when exhibited alone.	Cure pp.	Dr. Thornton, C. 77.
15. Lady.	Dyſpnœa.	Tonics. Aperients occaſ.	Ox. mod. dil.	Walks up ſtairs with leſs dyſpnœa after the inhalation.	Imperfect trial.	Dr. Thornton, C. 18.
16. Rev. Dr. ———	Fit every night, ending in expectoration.	Emetics. Aperients occaſ. and tonics.	Ox. ext. dil.	Strength and appetite increaſed.	Cure pp.	Mr. Townſend, G. 398.
17. Mrs. Barrett.	Spaſmodic.	Tonics. Aperients occaſ.	Ox. ext. dil.	Complexion heightened.	Cure pp.	P. N. A. 25.
18. Mr. ——	Humoral.	Tonics.	Ox. ext. dil.	General health eſtabliſhed.	Much ben.	Mrs. Barrett, A. 26.
19. B. Clopton, Eſq.	Spaſmodic.	None.	Ox. ext. dil.	Strength, and ſpirits, improved.	Cure pp.	P. N. A. 48.
20. Mrs. Barker.	Orthopnœa.	Tonics.	Ox. ext. dil.	Cancer leſs indurated.	Cure pp.	Mr. Barker, A. 23.
21. A Lady.	Humoral.	Aperients.	Ox. mod. dil.	Immediate relief.	Cure pp.	Mr. Phipps, A. 70.

Oppoſite ſpecies of air have undoubtedly been ſerviceable in Aſthma. To ſolve this paradox, Dr. Darwin ſupplies the following practical hints (Zoonomia, Vol. II. p. 183—5.). "In *Humoral* Aſthma, in which there is probably accumulated fluid to be abſorbed, and the violent reſpiration is *not* an exertion for the "relief of pain, an atmoſphere with more oxygen is likely to be of immediate advantage. In *Spaſmodic* Aſthma hydrogen has given relief." If hydrocarbonate give tone to the veins and abſorbents, the cure of Humoral Aſthma may then beſt be attempted by a mixed plan; by oxygenated air during the paroxyſms, by hydrocarbonate during the intervals, and perhaps with addition of oxygen; which mixture has not been ſufficiently tried. In a caſe of Humoral Aſthma, now under my care, this plan has done great ſervice.

CHLOROSIS AND SENSIBILITY INCREASED WITH IRRITABILITY (OR CONTRACTILITY) DIMINISHED.

22. B. P.	Chloroſis.	None.	Ox. mod. dil.	Heightened complexion	Relief repeated.	Dr. Carmichael, C. 73. A. 84.
23. Mary Rider.	Chloroſis.	None.	Ox. mod. dil.	Heightened complexion	Much relief.	Dr. Pearſon, C. 74.
24. Miſs L——.	Chloroſis.	Steel.	Ox. pure.	Steel given in vain before.	Cure pp.	Dr. Alderſon, Mr. Lambert, A. 14, 15.
25. Miſs D——.	Chloroſis.	Steel, aloes.	Ox. mod. dil.	Dyſpnœa ſpeedily relieved.	Cure pp.	Mrs. Stephens, A. 72.
26. Miſs L——.	Chloroſis.		Ox. dil.	Caſe not detailed.	Cure pp.	Mrs. Stephens, A. 72.
27. Miſs F——.	Head-ach, ophthalmia.	Opium in large doſes.	Ox. mod. dil.	Blood reddened. Sleeps with leſs opium.	Much ben.	Mr. Phipps, A. 71.
28. Miſs H——.	Violent ſpaſms.	None.	Ox. lit. dil.	Immediate relief.	Cure pp.	Mr. Phipps, A. 70. Dr. Thornton, Coll.
29. Mrs. S——.	Head-ach from decayed teeth.	None.	Ox. lit. dil.	Animation increaſed.	Great ben.	Dr. Darwin, A. 77.
30. Miſs M——.	Hyſteria. Fits 3 and 4 in a day.	None.	Ox. mod. dil.	Warmth and ſpirits.	Cure pp.	Mr. Townſend, G. V. II.

DYSPEPSIA.

Name.	State in other Respects.	Medicines besides.	What Air.	Circumstances.	Result as to the Disease.	Authority.
31. Mrs. Benham.	Head-ach.	Tonics.	Ox. ext. dil.	The vision improved; & dyspepsia relieved.	Imperfect trial.	P. N. A. 52.
32. Mrs. Broomhall.	Head-ach.	Steel, bark.	Ox. lit. dil.	Great increase of spirits.	Cure pp.	P. N. A. 53.
33. Mr. Cotterell.	Flatulence & indigestion.	Æther, steel, water impregnated with C.ac.	Ox. mod. dil.	Increased warmth.	Cure pp.	P. N. A. 54.
34. Mrs. J——.	Dysp. of pregnancy; and convulsive fits.	Æther. Peppermint.	Ox. lit. dil.	Immediate relief.	Imperfect trial.	Dr. Thornton, A. 57.
35. Mr. P——,	Flatulence & vomiting.	Æther.	Ox. mod. dil.	Sickness prevented.	Relief.	Mr. Townsend, G. 277.

EPILEPSY.

36. Mr. J. K——.	Frequent fits.	None.	Ox. mod. dil.	Same effects as opium.	Short aggravation.	Coll. Author.
37. Ann Smith.	Organic disease.	- - - -	Ox. mod. dil.	Spirits raised.	Not cured.	Dr. Pearson, A. 80.

HYPOCHONDRIASIS.

38. Mr. Russel.	Dyspepsia; and great lowness of spirits.	Steel, bark, &c.	Ox. mod. dil.	Relapsed when the ox. was at first left off, and the steel and bark continued.	Cure pp.	Mr. Townsend, G. 293. P. N. A. 55.
39. Mr. Windy.	Amentia, with cold extremities.	Æth. emet. aper. tonics.	Ox. lit. dil.	Warmth after emetics and cathartics.	Ben. great, pp.	Mr. Townsend, A. 29.
40. The Rev. Mr. T——.	Low spirits.	Tonics.	Ox. lit. dil.	Spirits raised.	Cure pp.	Coll. Dr. Thornton.

PALSY.

41. Mr. Danby.	From lead.	Tonics.	Ox. ext. dil.	General health restored.	Ben. great pp.	P. N. A. 31.
*41. Major Brathwaite.	From opium.	Acidulated drinks.	Ox. lit. dil.	Immediate relief.	Cure pp.	P.N. A. 23. M.Ex. 638.
42. W. Trayhern.	No use of lower limbs.	Some bark and opium.	Ox. mod. dil.	Warmth.	Cure p.	Mr. Rolph, A. 85.

PHTHISICAL CACHEXY, AND PHTHISIS.

43. Mr. B. F——.	Florid hæmoptoe.	None.	Hdc. dil.	Heat in the chest removed.	Cure p.	Dr. Redfearn, A. 11.
44. Miss ——.	[illegible] Florid.	None.	Hg. pure 1 quart.	Less florid; heats removed.	Cure pp.	Dr. Alderson, A. 16.
45. Master Crump *.	Phthisis far gone.	None.	Hg. $\frac{1}{3}$. $\frac{1}{5}$.	Less dyspnœa.	Not cured.	L. Mr. Crump.
46. Mr. [illegible] Whitehead *.	Phthisis confirmed.	- - - -	Hg. $\frac{1}{3}$.	Pulse reduced.	Imperfect trial.	Dr. Ferriar, V. II. 226.
47. —— Gent.	Last stage.	Opium. Oil of almonds.	Hg. ext. dil.	U[illegible]ent symptoms removed.	Not cured.	Coll. Dr. Thornton.
48. J. A*.	Last stage.	None.	Hdc. dil.	Relief.	Imperfect trial.	Dr. Carmichael, C. 83.
49. S. C*.	Far gone.	Aperient, p. r. n.	Hdc. dil.	Relief.	Imperfect trial.	Dr. Carmichael, C. 85.
50. J. T.	Far gone.	None.	Hdc. dil.	Influenza during convalescence.	Cure p.	Dr. Carmichael, C. 87. A.
51. Mrs. P——.	Far gone.	Bals. of Mecca.	C. ac.	Disease from imposthume.	Cure pp.	Dr. Ewart, C. 91.
52. Dr. Crawford.	Far gone.	Tonics. Opium.	Hdc. dil.	Relief at the time of inhalation.	Imperfect trial.	Dr. Thornton, A. 88.
53. [illegible] Knowles.	Phthisis?	- - - -	Hg. aft. Hdc.	- - - -	Not cured.	Dr. Ferriar, V.II. 231.
54. [illegible]elen Jones.	Last stage.	None.	Hdc.	- - - -	Not cured.	Dr. Ferriar, V. II. 239.

* In these cases, circumstances more or less interrupted the exhibition; yet the benefit at one time or other appeared so great, that of many possible combinations, if [illegible] should add but a little to the efficacy of the air, hopes of recovery in similar states might be entertained. Several patients were observed to sleep better after [illegible] air. Dr. Pearson observes that æther-vapour eases the dyspnœa of phthisis.

PNEUMONIA, CROUP, AND CATARRH *.

Name.	State in other Respects.	Medicines besides.	What Air.	Circumstances.	Result as to the Disease.	Authority.
55. Mrs. S——.	Pneum. first day.	None.	Hg. 44 c. i. to atm. 556.	Immed. ease.	Cure pp.	Author, L. 48.
56. Master Tovey.	Croup.	Aperients.	Az. dil.	Immed. ease.	Cure pp.	Mr. Townsend, G. 103.
57. Mr. R. Edgeworth.	Catarrh, second day.	None.	Hg. mod. dil.	Stricture removed.	Cure pp.	P. N. A. 91.
58. R. Stanley.	Catarrh, 1st stage.	Active.	Hdc. dil.	- - - -	Cure p.	Mr. Barr. A. 74.
59. Mr. T. W. Townsend.	Catarrh, 1st stage.	Aperient.	Æther-vapour.	Instant ease.	Cure pp.	P. N. A. 40.
60. Mrs. Eaton.	Influenza, *not* 1st stage.	Yeast. Aperients. Squills.	Az. and C.ac. dil.	Catchings of breath, and pain at the time of inhalation.	Imperfect trial.	Dr. Thornton, A. 66.
61. M. Adams.	Pneumonia, 10th day.	Active.	Hg. $\frac{1}{3}$	Sickness.	Not cured.	Dr. Ferriar, V. II. 237.
62. 2 Patients.	Pneumonia, or phthisis?	- - - -	Hg. pure.	Sudden ease.	Cure pp.	Dr. Macdonnel, C. 30.
63. 3 Patients, 1st stage.	Pneumonia.	Evacuants.	Yeast.	Produced great eructations.	Cure pp.	Dr. Thornton, A 61.

* Most serious disorders in our climate, and in which we may look for great benefit from airs. The pneumatic treatment may, I think, be regulated thus. In and near the first or *dry* stage (when the absorbents seem to be most excited) *hg.* or *az.* should be given. In the last, or *moist* stage, which is very fatal to old people, and dangerous to all where the absorbents have been debilitated by the preceding inflammation, or by any other previous cause, *dil. ox.* should be cautiously given: perhaps with *hdc.* also. In the intermediate stages give *hg.* if you want to abate inflammation; but *ox.* if the function of respiration requires assistance, as in the last stage with old and weak people, where medicines will do little or nothing.

TYPHUS.

64. Miss M——.	Last stage.	Bark, and wine impregnated with C.ac.	Ox. dil.	Instant relief.	Cure pp.	Coll. Dr. Thornton.
65. Several Patients.	Typhus, typhoid.	Bark. Water or wine impregnated with C.ac.	Yeast.	The progress of cure rapid.	Cure pp.	Coll. Mr. Cartwright Dr. Thornton, A.66. Mr. Townsend, G. 62.

ULCERS CANCEROUS, FOUL, STRUMOUS.

66. Female Patient.	Cancer mammal.	Arsenic.	C. ac. external.	Long free from pain and fever.	Speedy ease.	Dr. Ewart, E.
67. Mrs. A——.	Ditto.	Tonics occasionally.	C. ac. external.	Long free from pain and fever.	Speedy ease.	Dr. Ewart, E.
68. Mr. Atwood.	2 large foul ulcers of the leg.	Tonics. Aperients occas.	Ox. ext. dil.	General health established.	These 2 ulcers were filled up and skinned over in less than a month.	P. N. C. 57. Mr. Townsend, A. 29.
69. J. Patterson.	Herpes, and large ulcer of the leg.	Tonics. Aperients occas.	Ox. mod. dil.	Sight mended.	Cure pp.	Dr. Thornton, C. 64. Mr. Townsend, A. 29.
70. Mrs. Munt.	Ulcer of 18 years standing.	Tonics. Aperients occas.	Ox. ext. dil.	Very corpulent.	Cure pp.	Dr. Thornton C. 65. P. N. A.
71. Male Patient.	Strumous ulcer.	Bark.	Ox. and hdc. with ox.	Health mended, case in progress.	*Ben. great.*	*Mr. Barr, C. 66.*
72. Mr. Cooper.	Tumours and ulcers.	Tonics,	Ox. lit. dil.	Spirits increased, sight stronger.	Cure pp.	P. N. A. 50.
73. Many Patients.	Scrophulous sores.	None.	Sorrel poultice.	Redness, and pain produced.	Cure pp.	Mr. Mills, C. 48.
74. Many Patients.	Foul ulcers, mortifications.	Pro re natâ.	Charcoal poultice.	Fœtor removed.	Cure pp.	Mr. Sandford, C. 122. A.
75. Mr. Cummings.	Humour in the face of 2 years standing.	Tonics.	Ox. mod. dil.	Comparative trial.	Cure not p.	P. N. A.
76. Many Patients.	Eruptions cutaneous.	None.	Yeast.	- - - -	Cure p.	Drs. Johnstone, Pearson, Mr. Rolph, Author.
77. Capt. ——	White swelling.	Tonics.	Ox. mod. dil.	General health improved.	Cure p.	Dr. Thornton, A. 21.
78. W. G.	Carbuncular tumours.	Tonics.	Charcoal poultice.	- - - -	Cure p.	Mr. Sandford, A. 94.
79. E. M.	Bad nose, schirrous?	None.	Charcoal poultice.	- - - -	Cure.	Mr. Sandford, A. 95.

CONSIDERATIONS

ON

FACTITIOUS AIRS;

BY

THOMAS BEDDOES, M. D.

AND

JAMES WATT, Engineer.

PARTS IV. and V.